COAL AGE

The Weekly Journal of the Coal and Coke Industries

Volume 18 NEW YORK, THURSDAY, DECEMBER 23, 1920 Number 26

Getting Down to Business

COSTS of production, quality of product and service are the interrogation marks the coal man sees where'er he turns today. From now on it is not merely a question of mining and shipping coal but of mining good coal, shipping it clean and selling it to advantage. As one of our correspondents notes, the day of the real coal man has returned, and the amateur must needs begin at the bottom and learn the business.

The return of competitive conditions augurs well for interest in association work in problems of cost accounting, in freight rates, and other matters of common interest. In the last three years there has appeared a new crop of coal men whose ability to stay in the business depends entirely upon the diligence with which they study their problems. There are times when coal is just plain dyed mud; there are times when coal is coal, but more often coal is merchandise—all of which is another way of saying that the market is sometimes excellent, sometimes indifferent and more often poor.

When the demand for coal is so strong that ordinary rules of doing business go by the board, the trade is withal profitable but fraught with political pitfalls—as this year, when the industry is threatened by politicians with some unknown form of harness because of high prices. It is to be assumed that common sense will somehow prevail at Washington this winter and that what the coal industry has next to face is not Federal intervention in the form of fixed prices but an unrestricted supply and a market that is easy—a restoration of the working of the law of supply and demand brought about by the bridging of the space between mine and furnace by ample transportation.

Making Improvements in the Off Season

FEW industries in the United States have had their activity so nearly sustained to the close of the calendar year as coal. The slump in many lines began in the late summer and had reached the bottom by the beginning of December, but bituminous coal production has not as yet suffered as it will later when all consumers are satisfied. In consequence the coal industry will close the year in satisfactory shape, with little if anything to be "written off" in inventories. It is assumed that the coal producer was not embarrassed in meeting his Federal taxes on Dec. 15, but next March, when the first installment of 1920 taxes fall due, he may be in a somewhat different condition, unless he has laid by a surplus from this year's earnings.

It is generally recognized as good business to spend money in off periods of industrial activity for development and works of improvement. Expansion of the capacity of bituminous coal mines in 1920 was great but it was largely gained by the opening of numerous small high-cost properties. Operations of this type cannot exist when prices approach the cost of production of the larger or better-equipped properties, and in fact are today rapidly going out of business because they have ceased to be bonanzas.

But the average production of 530,000,000 tons of bituminous coal for the last five years and 550,000,000 tons this year cannot have been accomplished without exhausting many coal-mining properties and greatly depreciating the equipment in the remaining operations. No less than 200 commercial mines must be opened each year to maintain output at its present figure. Despite the present dull outlook in industrial and railroad coal business, these new mines must be opened and developed during the coming year.

As an industry deserving the consideration of financiers coal has made notable progress since 1914, evidence of which is to be had from many quarters. The next six months, no matter what the spot price of coal, will witness steady development of old and new mines. It is good business to use any idle time offered by lack of orders for coal in perfecting the machine for the next spurt. Trained and desirable labor can thus be held and given at least earnings sufficient for existence. It is fortunate that the coal industry is in position to finance such a period of dullness as is in prospect and to be able to invest for future use a part of the earnings of this year.

The Calder Report

STRIPPED of repetitions and inconsequentials as well as of pure diatribe, the Calder report may be summarized as a conclusion that "the private interests now in control of the production and distribution of coal, in spite of efforts by some, are actually unable to prevent a continuance or a repetition of the present deplorable situation and that it is the duty of the government to take such reasonable and practical steps as it may to remedy the evil." Turned aside from its legitimate field of investigation into the evils of the building industry by the alluring headline value of attacks on high prices for coal, this committee has attempted to tell Congress that something is grievously wrong with the coal industry, without itself seriously studying the industry.

In the first place the committee takes no cognizance of the fact that the "present deplorable situation" has been already largely cured; that prices, particularly of bituminous coal, are again low; that the comparatively small percentage of producers of anthracite who were collecting exorbitant premiums on their small outputs have been compelled by the law of supply and demand to lower prices; that no one has suffered from cold because of lack of coal, and that the country is well stocked and is fast losing interest in scare-head stories about the "coal barons."

The admission that the men in the industry "are actually unable to prevent a continuance or repetition" of the conditions the Senator deplores likewise is an admission—not intentional, of course—that the coal men were not responsible for any of those conditions.

Refusing to accept the fundamental fact that the high prices of bituminous coal of last summer were effects and not causes, and that the cause was lack of transportation, the report of the Senate Reconstruction Committee attacks the granting of priority orders to coal by the Interstate Commerce Commission and charges that profiteering was the result of such orders. Not a word is said about increasing the transportation facilities of the country or recognition of the fact, as shown by evidence presented to the committee, that the priority orders simply permitted coal to have its fair share of transportation. Nor does the report distinguish in any manner between anthracite and bituminous coal, the conditions surrounding which, as regards production, distribution and cost, are as different as night from day.

We fail to find in the report of the committee reference to the real cause of the high prices of anthracite—loss of production through labor strikes—nor does the remedy proposed by the Senators make provision for preventing losses to the public from this cause.

After all the fireworks Senator Calder and his assistant, F. T. Miller, have let off during the last summer and autumn they finally conclude not that there be Federal regulation or control, but that all producers, shippers and handlers of coal be required by Federal statute to file reports of all their business transactions for "possible use by the Department of Justice and other governmental agencies" in eliminating "prevailing evils as to irregularity of deliveries, inferiority of quality, profiteering in prices, and undue monopoly of transportation." Federal licensing is suggested as an extreme remedy.

With the arraignment of the looseness with which coal contracts are held, we are more sympathetic. In large measure operators and shippers are warranted in protecting themselves in their contracts from loss of production through poor car supply, but entirely too many shippers during the season just past found too many ways to dodge their obligations, when it was to their gain, to enable the industry as a whole to uphold as perfect or even as the best possible form the present practice of doing business. But the Calder committee makes no mention of correcting this evil by having the government—whose "inherent responsibility" is proclaimed in protecting the people from unfair prices and broken contracts—insure an ever-present car supply for the mines and thus remove the only joker in the coal contract.

The Senate Committee on Reconstruction and Building having spent so much of its valuable time and our money on coal, it is hoped that some work may yet be done on the question of profiteers and graft in the building trades. However, a committee as prejudiced against the coal producers as this one may well be suspected of being as prejudiced in favor of the producers of buildings. If nothing more constructive for the building industry can be suggested than has been presented for coal, this committee may well be discharged.

Full Day's Runs

PERHAPS no greater source of gratification to a mine worker can be given than the assurance that any promise made of a full-day's run will be kept by the management. Hitherto there always has been a doubt of the truth of the promise made by an executive when he displayed the placard "Work tomorrow at Mine 16" or some like notice. This doubt always remained unless a string of empty cars—enough to permit of a day's run—was seen above the tipple.

Too often there was nothing but the promise of the railroad to supply the cars, and when the next morning came, the cars were not in sight, and the operator's representative was compelled to keep track of the slow progress of the train which was to bring him the means of operating his mine. A derailment, the pulling of a brake rigging, a long wait at a passing point, a heavy fall of snow or a slide often delayed the railroad train, and nothing remained finally but to close the mine for that day. Sometimes the incoming locomotive failed to bring to the local switching engine the promised number of cars and someone went short or all the mines on the branch failed to receive the quota promised.

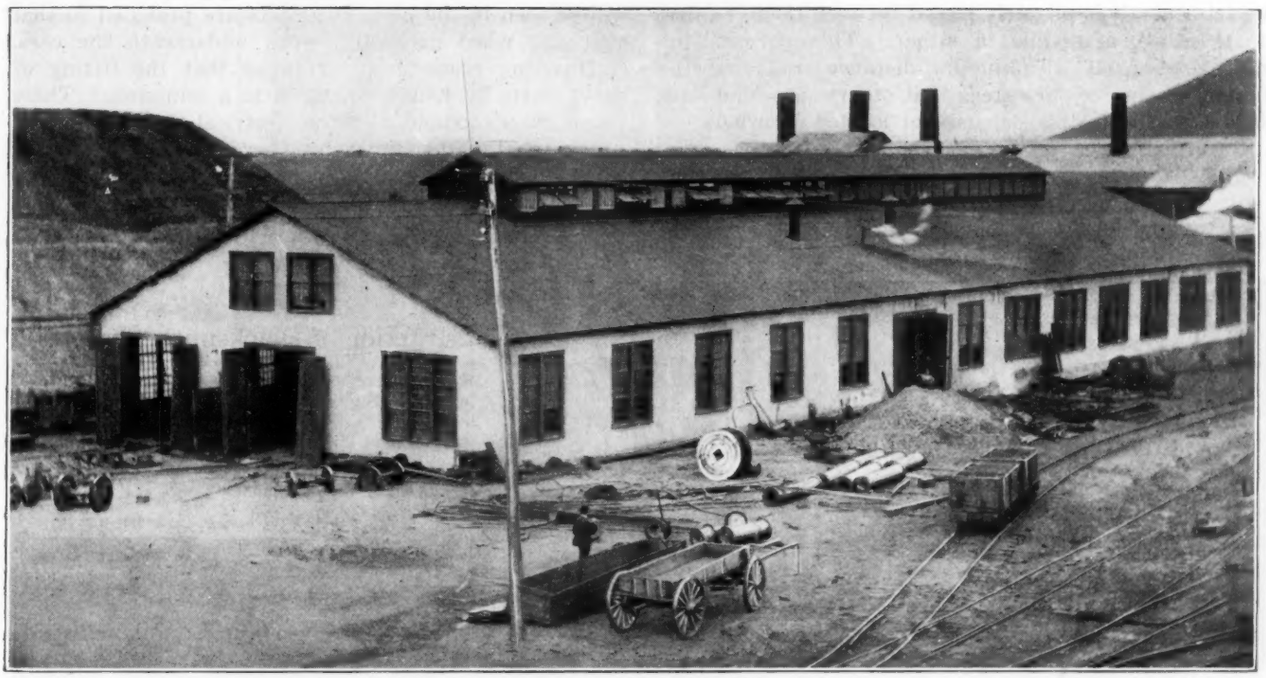
In other cases the mine ran, but the quota was unequal to a full-day's run, or again some cars might contain frozen manure, ashes, road material or snow, or might need repair, and a delay was caused that either kept the men idle below ground or caused all of them to start for home, discontented and disappointed.

At some mines today a sufficient storage is maintained so that when the bins are empty over the night which precedes a running day, a promise to run may be made with certainty that it will be fulfilled—cars or no cars—provided, of course, that there is a market for run-of-mine or that the coal can be run through the screens from storage. Men then do not wait to see cars above the tipple, but enter the mines to fill the storage bins. Many a mine is closed down because, owing to uncertainty as to the prospects, enough men abstain from going to work to make operation extremely unprofitable.

Moreover, with such storage, work can go on, no matter how annoying may be the delays from cars improperly cleaned or out of repair. It is not necessary to run such cars below the tipple. While they are being cleaned, the mine can be run to storage, and the same resource is available should a derailment hold up work, or screens have to be changed, or an elevator play out in the washery.

The steadiness of run is a source of profit to the operator. He gets more and better men; he is apt to get a fuller quota when he does run; he has no two-hour allowances to pay for daymen awaiting cars; his organization continues to function smoothly; he stands well with the railroad because he can always be relied on to fill promptly the cars that are delivered to him and because he never runs cars through the tipple to be shifted back into line. If cars come in late on Saturday, they can be filled readily for the Sunday crews, and Sunday often is the busy day on the main line. The provision pays dividends and creates satisfaction all around. It is cheaper to store coal in big bins than in mine cars, for the latter are, of course, the most expensive of all storage receptacles, and coal is likely to freeze in them.

At some mines only slack is stored or at least the bulk of the piles are of that class of coal. Then when cars are few the lump and nut orders can be filled and the slack stored. There are various forms of day-to-day storages. They are expensive in first cost, but they pay well in dividends and in satisfaction.



Accessibility, Convenience and Cleanliness Make This Machine Shop Efficient

Plenty of Light, an Arrangement That Precludes Lost Motion in Operation, Adequate Equipment and Neatness Continuously Maintained Render Possible the Performance of Excellent Work with Minimum Effort on the Part of the Workmen

By Dever C. Ashmead
Wilkes-Barre, Pa.

MACHINE shops at coal mines usually have such a haphazard arrangement that they do not lend themselves to description. A glance at the arrangement of the shop shown in the accompanying illustrations, however, reveals that much thought has been taken in its design. Each department is placed so that it can give the greatest degree of co-operation to the work of the others, and do it with a minimum expenditure of effort.

This machine shop is located near Hazleton, Pa., and is the property of the Cranberry Creek Coal Co. It was designed with two main purposes in view; first, the maintenance of the locomotives and, second, the upkeep of the mine cars. But, of course, any equipment which may be damaged anywhere around the mines comes to this plant for repair. At this mine 300 steel mine cars with Hyatt roller bearings are in use as well as 700 old-fashioned wooden cars. Twelve narrow-gage locomotives are used on the surface as well as four of standard gage. In the mine two 15-ton Goodman electric locomotives are employed as well as two 8½-ton machines, one of which was built by the Goodman Manufacturing Co. The coal company also employs eight 5½-ton Ironton storage-battery locomotives and one 6-ton Mancha.

Fig. 1 shows the exterior of the combined shops. The frame, including the roof trusses, is of wood. The walls proper are of Hy-rib lath covered with stucco. The roof is covered with asbestos roofing made by H. H. Robertson Co. Plenty of light is furnished by the many windows on all sides of the building. This is shown not only in the frontispiece but also in the plan of the building, Fig. 4.

Determining the Position of Departments

The interior arrangement is interesting. At one end of the building the mine cars enter, and the other end accommodates the locomotives. This keeps the two distinct types of work separate, and therefore determines the position of the machine and carpenter departments. Naturally the mine cars require more carpenter work than the locomotives. Accordingly this department is located near the point of entrance of the mine cars. The locomotives, on the other hand, require more work from the machine shop, and as a result this shop is near the end of the building that is devoted to their repair. In many instances, however, machine work must be done for the mine cars and carpenter work on the locomotives. As a result a connecting track is laid between these two departments which permits a locomotive to be sent from the machine shop to the carpenter shop and vice versa, without the necessity of leaving the building.

As the blacksmith shop has to do work for both

departments, it is properly placed between them, so that it is readily accessible to either. This permits the moving of parts a minimum distance, reducing the number of unnecessary steps that otherwise would have to be taken were this department located elsewhere.

One subdivision in the car shop is of interest. As a number of mine cars are built of steel, the car-repair shop is divided into two sections, and the repair work on the steel cars is done in the portion of the car-repair department most remote from the mine-car entrance. This places this type of car as near as possible to the machine and blacksmith shops. The locations of all of these departments are shown on the plan of the building, Fig. 4.

FIG. 1

Interior of Blacksmith Shop

At the right may be seen the steam hammer. Such hammers are by no means as common in mine repair shops as is desirable. They may be made to do much of the medium to heavy forging.

FIG. 2.

Carpenter Shop

In the right background may be seen a portion of the blacksmith shop, showing how closely these departments come together. Such compactness lends itself to ease of operation and consequent efficiency.

Needless Travel by Men Is Eliminated

To take up the details of the various departments: In the north end of the building, to the left as one enters, is the electrical shop. As most of the electrical work on the locomotives is done underground, this shop is located nearest to the slope, with the result that the distance the men have to travel back and forth to their work is reduced as much as possible. Of course, all the armature winding is done in the shop itself and not below ground. Besides this, this department maintains all the electrical equipment at the plant. On the occasion of my visit, this shop had not yet moved into the main building, but at the present time it is doubtless in the quarters prepared for it.

Immediately to the rear of the electrical department is the carpenter shop shown in Fig. 2. The equipment consists of the following: One Fay Eagan hub mortiser and drill, one Oliver universal saw and one 48-in. grindstone. Power is furnished by a 40-hp. Fairbanks-Morse motor.

To the right of the electrical shop as one enters the building are the repair tracks for the mine cars. As will be seen in the plan, large pits are provided so that men can, when necessary, work underneath the cars. A traveling crane is so arranged that the lifting of heavy parts by hand is reduced to a minimum. These repair tracks extend past the electrical shop and to the end of the carpenter shop, where the space allotted to the repair of steel mine cars is located. As the blacksmith department has to do much work for these cars, the section devoted to their repair is made readily accessible to the blacksmiths, who are located on the left-hand side of the building immediately to the rear of the carpenter shop. In the steel-car shop, as it might be called, a riveting forge has been installed, so that it is unnecessary to heat the rivets in the blacksmith shop.

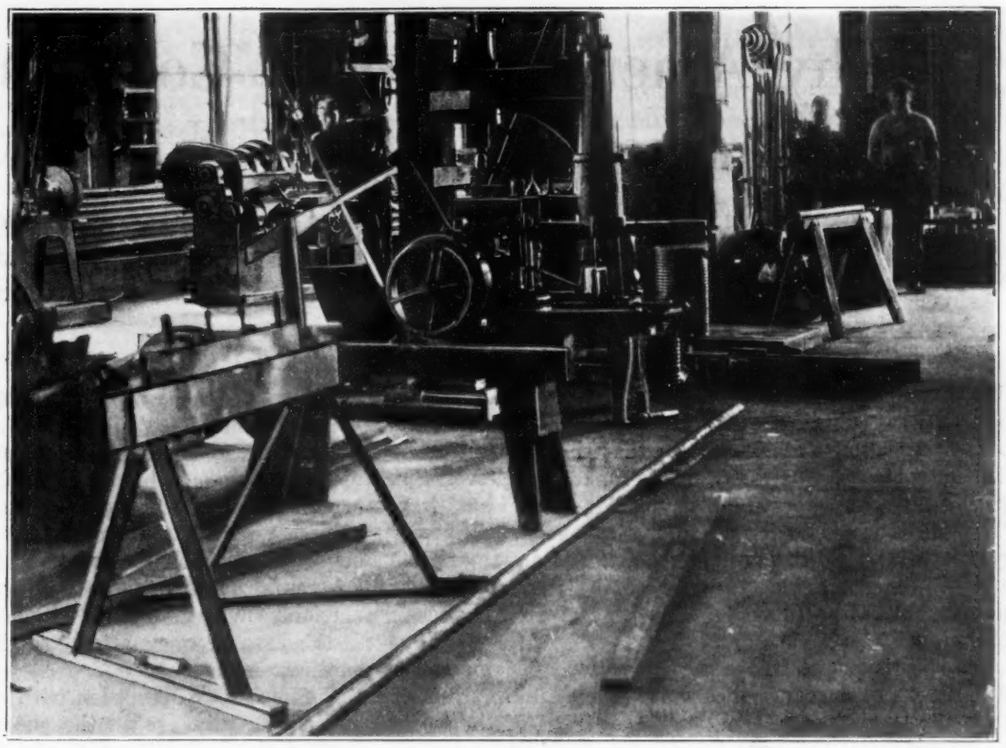
The blacksmith shop has four large forges, one placed at each corner of the department. Located conveniently, in approximately the middle of the shop, is an 800-lb. Sellers steam hammer. Fig. 1 shows this hammer as well as two of the forges. In Fig. 2, to the extreme right, at the rear, can be seen the same two forges, showing how close the carpenter shop adjoins that provided for the blacksmiths.

Immediately to the rear of the blacksmith shop is the machine shop, the interior of which is shown in Fig. 3. The equipment of this department is excellent, capable of handling almost any work that is required about the mine. The following is a list of the machinery installed in this shop: A 16-in. Pond lathe (old), a 26-in. Maine electric lathe, a 26-in. W. F. & J. Barnes post drill, a 100-ton Watson-Stillman portable wheel press, a 48-in. radial drill, a double 18-in. emery grinder, a 1½-in. National Machine Co. bolt machine, an 18-in. Atkins Kivit Kut power saw, a No. 9 and a No. 6 Victor pipe machine, cutting threads on pipe from ⅛ to 8 in. in diameter, a 26-in. shaper, a punch and shears, and an Ox-Weld welding and cutting outfit. The large radial

FIG. 3

Machine Shop

Equipment of this department is such that few jobs coming to the shop are beyond its capabilities. An autogenous welding outfit is part of the equipment.



drill has a pit beside it, so that long work can be handled. Acetylene for welding and cutting is made as required in a generator having a capacity of 50 cu.ft.

Immediately across the building from the machine shop is the locomotive-repair department. Here a large pit has been built under the track, so that the men can have plenty of room while working under a locomotive. As will be seen from Fig. 3, all the machines that require a large amount of light in their operation are placed near windows. This permits the men to do the best work possible. A traveling crane operated by hand spans the central bay and may be traversed the full length of the machine shop, permitting the handling of heavy equipment with minimum manual labor.

Several changes have been made from the original design. At first it was considered desirable to place narrow-gage industrial tracks throughout the building. This plan was abandoned, and the mine-car tracks have been run wherever they were believed to be necessary. The latter had to be extended into the building regardless of the use of industrial tracks, and the omission of the narrow-gage roadways prevented an unnecessary duplication.

It will be noted in the plan of the building that the track arrangement is now made so that any one of the departments is readily accessible from any other. Lavatories are placed at one end of the building, while at the other end a washroom has been installed. Looking at these interior illustrations of the different departments, it will be noted how exceptionally clean the floors are kept. These pictures were made at a time when the foremen were not expecting or anticipating that photos would be taken, so that the condition shown is not exceptional.

With plenty of light, a clean and attractive place to work in, departments so arranged that the men do not have to take unnecessary steps in the prosecution of their tasks and with the excellent equipment furnished, it is no wonder that the men here employed can turn out the fine quality of work that they do.

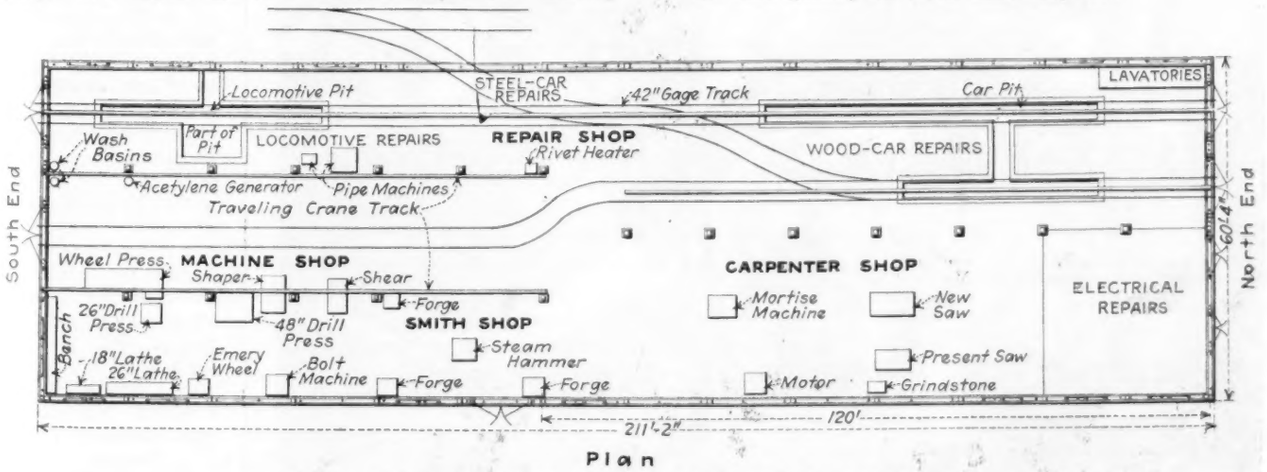


FIG. 4. SHOP ARRANGED SO AS TO SAVE UNNECESSARY STEPS

Shops at coal mines are side issues and in consequence they do not get the attention they deserve. Machines should be put as near as possible to the work they have to perform so as to shorten the time consumed in completing the work.

Why America's Export Coal Business Should Be Built Up—II

Overseas Coal Trade's Share in Great Britain's Maritime Success Cited in Emphasizing the Importance of Foreign Commerce in Coal —Fleet of Colliers Called Backbone of British Shipping Industry

By Erich W. Zimmermann, Ph.D.*

DEFENSE of coal exports against certain charges was contained in the preceding part of this article. We have shown that the exportation of coal is not as bad as many try to make us believe. But to say that coal exports are not bad is to stop half way. The full truth is that coal exports are good. A strong coal export trade is a valuable asset for any maritime nation, but particularly for a country which is just about to regain a footing in the keen rivalry for ocean shipping.

It is this connection existing between coal exports and maritime success which makes a careful analysis of our position in the international coal trade of the world so important at this particular juncture of the country's history when we hope to regain our place on the seas, lost when the sun set upon the supremacy of the clipper ship. As a nation we are not yet "ship-minded." We have to learn a great deal, and particularly in trying to form an opinion and to pass judgment upon the merits and demerits of as complex a problem as that offered by coal exports we shall do well to study carefully the experiences of other nations whose lot it was to antedate us in the matter of coal exportation. Among these nations Great Britain is in a class by herself. We therefore ought to familiarize ourselves with the views which enlightened Britishers have formed concerning coal exports—views based upon decades of experience—and then see to what extent we can apply to our own situation the lesson which they have to teach. Of course, it is taken for granted that we cannot slavishly imitate—apply without modification. Never is the case of one nation exactly the same as that of another.

We begin our discussion with several statements made by British thinkers on the subject of coal exports:

"The fleet of colliers is the backbone of England's shipping industry; the remaining branches of our seaborne commerce are but the offshoots of the coal trade. Our entire merchant marine trading with countries east of us, such as Norway, Russia, France, etc., and to a lesser degree the vessels going to the West Indies, are but a part of our coal fleet, which they leave for a voyage or two during the year when market conditions abroad or freight rates warrant their doing so. The coal trade is indeed the refuge and mother of our shipping industry."

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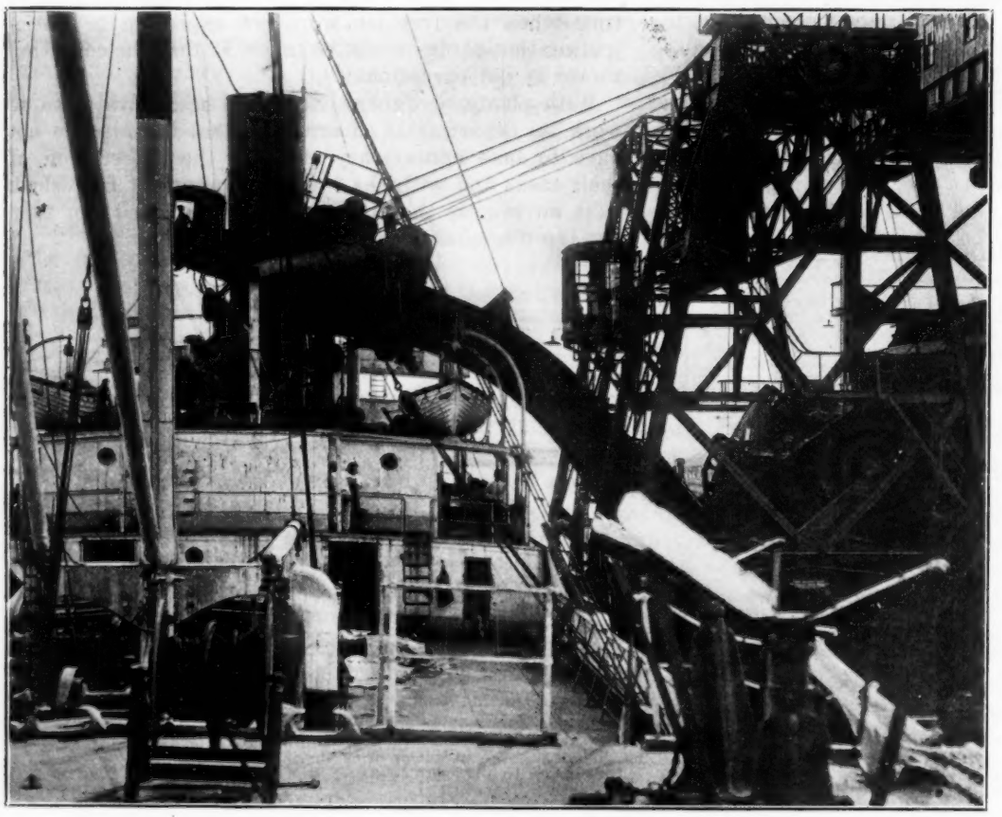


Coal Loading at Charleston

A close-up of coal-loading machinery in action on the Charleston waterfront. The hoist is swinging over one of the hatches of a ship preparatory to filling the hold with coal for export. The machinery picks up railway cars and dumps them into the chute as easily and as quickly as you would pick up a hand scuttle and empty its contents into an open grate.

Photo by Ewing Galloway.

This was written in 1699, or 221 years ago. We found it in a pamphlet entitled "The Mischief of the Five-Shilling Tax Upon Coals," which we unearthed from among the treasures of the library of the British Museum. We see that the question of the desirability of coal exports is an old one. About a hundred years later Adam Smith in his famous treatise "The Wealth of the Nations" argued against hindering coal exports, as he considered it unwise to "restrain the export of the instruments of trade."

But we live in the twentieth century and are more concerned with what people think today. During the war the far-seeing British Board of Trade, the organization which corresponds to our Department of Commerce, appointed a committee to consider the position of the coal trade after the war. The report came out in 1918. It begins with the following "essential preliminary consideration":

"The report is drawn up on the assumption that it is essential in the national interest that the export coal trade, which before the war amounted to about one-fourth of the entire output, should not only be maintained but that every effort should be made to increase it.

"If the export of coal were stopped, or even materially reduced, this would result in the throwing out of employment of a vast and varied body of workers and the loss of a very large amount of wealth to the country now distributed in wages and in the maintenance of industry. It would have a serious effect on the shipping tonnage carrying on the overseas trade from our ports and would raise the level of homeward freights and increase materially the cost to the country of foodstuffs and raw materials. It would increase the cost of producing the coal required by every industry and householder in the country. It would lead to serious depreciation of railway and dock property, and might even cause the ruin of some of the companies carrying on these undertakings.

British Planned to Increase Coal Trade

"Such considerations appear to the committee to point conclusively to the necessity for a strong policy being followed in developing the export coal trade as vital to the economic interests of the nation. Upon this aspect of the subject the committee endorse the view expressed in the report issued by the Royal Commission on Coal Supplies in 1905 in the following terms:

" 'The witnesses generally were of opinion that the maintenance of a large coal export trade is of supreme importance to the country and essential to the prosperity of the coal-producing districts. It is said that the larger output rendered possible by the export trade enables the collieries to be worked regularly and to the fullest capacity, and that the general and fixed charges being spread over a larger tonnage, the average cost of working and consequently the selling price to the British consumer can be kept lower than would be the case if the collieries were worked for home consumption only. It was pointed out by some of the witnesses that coal is so essential an element of outward cargoes that any diminution of our coal export must cause a rise in the import freights on goods, etc. The evidence shows that a large quantity of the coal exported to foreign countries is destined for the use of British ships coaling abroad.' "

But after all, that report was written by men more or less directly interested in the exportation of coal. So the sceptic might be apt to discount a great deal of what they have to say as partial and selfish propaganda. So we turn to another report written by a different committee, also appointed by the Board of Trade. This committee was to consider the position of the shipping and shipbuilding industries after the war. Here we read:

"In the period up to the outbreak of the war we were the ocean carriers of the world. Our carrying trade was dependent on three main factors:—

"(a) The strong industrial position of the United Kingdom itself, based on free access to markets of the world for foodstuffs and raw materials.

"(b) A worldwide empire with well-distributed coaling stations and ports of call.

"(c) A large coal-export trade which provided ships with outward freight which otherwise would have been lacking."

The last factor is all coal; the second one is partly coal and, as we shall see later on, the first factor has a good deal more to do with coal exports than appears at first sight. Coal is indeed the key to an understanding of the carrying trade.

American Authorities Favor British Plan

Perhaps even British shipping men are prejudiced in favor of coal exports. So we turn to American students of the shipping situation. In his latest annual report our Commissioner of Navigation makes this statement: "British trade and shipping for years were developed, looking only at the material side of it, on the production of an excess of coal for export beyond domestic demands." Our Shipping Board in a valuable publication entitled "Steamship Fuel Stations" voices similar views. The National Bank of Commerce in its Commerce Monthly (Vol. 1, No. 7) said: "Coal is Great Britain's greatest natural resource . . . Upon the ability to export coal depends Great Britain's ability to import the raw materials necessary for the carrying on of her great industrial life."

Enough has been said to show what men entitled to speak as authorities think of the economic significance which coal exports have for Great Britain. Let us now study the facts and see to what extent the lesson of Great Britain may be applied to our own situation.

In the first place, we shall try to explain why, generally speaking, coal is a most desirable vessel cargo. We content ourselves here with a curt enumeration of the various factors which account for this desirability:

(1) The general usefulness of coal, which assures a wide market.

(2) The relative scarcity of coal—the number of coal-using countries exceeds by far the number of coal-producing countries.

(3) The load factor of coal, which allows an almost ideal utilization of cargo space.

(4) The relative ease with which coal may be loaded into the holds of tramps, gravity doing 90 per cent of the work.

(5) The steadiness of the coal trade, which in contrast to the trade in agricultural products is hardly, if at all, affected by seasonal fluctuations.

(6) The usefulness of coal as a ballast cargo, which, however, was more important before the construction of double-bottom vessels than it is now.

These factors are capable of general application. They hold good for American shipping with equal force as for British, Norwegian or any other. But besides these general characteristics of coal as a commodity there are special circumstances peculiar only to the British

situation which account for the fact that England's lesson cannot, without modification, be applied to our own case.

There is, most important of all, the general character of the trade of the United Kingdom. We frequently meet with the erroneous idea that England's trade is largely in the nature of an exchange of manufactured products for raw materials and foodstuffs. That is only a half truth. It would be nearer to the facts to say that Great Britain pays for its imports of raw materials and foodstuffs with the products of her cotton mills and the services which her bankers, insurance companies and shipping concerns render to foreign countries. The British Board of Trade in a report recently published estimates the net earnings of British shipping for the current year at approximately $2,200,000,000, a goodly portion of which amount was undoubtedly earned by carrying other countries' goods. But that refers to the financial side of the trade balance only.

How Coal and Finished Products Travel

Many people believe that the ships which carry the raw materials and foodstuffs to the ports of the United Kingdom also carry the finished products of the mills. But that is a serious misconception. Roughly speaking, the balance of British commerce, so far as weight is concerned, is raw materials and foodstuffs vs. coal. These goods are generally carried in tramps, while the finished products travel in the company of passengers or on freight liners. A few figures will prove the case:

	Estimated Imports into United Kingdom in Gross Tons	Exports of Coal from United Kingdom in Gross Tons
1913	54,500,000	73,400,000
1914	46,400,000	59,000,000
1915	45,500,000	43,500,000
1916	41,400,000	38,400,000
1917	34,000,000	35,000,000
1918	35,200,000	31,800,000
1919	39,000,000	35,200,000

It appears that the weight of the coal exports alone would have sufficed, in several of the years enumerated here, to balance the weight of the imports. Of course, things do not come out as nicely in reality as they appear on paper. Much coal is exported by ships which do not bring back any commodities at all. At least that was the case in the days before the war, when whole fleets of special colliers equipped with rapid loading and unloading machinery used to ply between the Bristol Channel ports, the Humber ports and particularly the Tyne ports and Rotterdam, Hamburg, Havre and other important shipping points on the Continent. These ships relied upon the rapid turn-around for their profits and were operated much like ferries or like most of the tank steamers.

Still other ships would take coal to lonesome islands, important, because of their strategic position astraddle important sea lanes, as coaling stations but non-productive as far as outward cargoes are concerned. Those ships also would either have to return empty or else—and that undoubtedly is the rule rather than the exception—seek a homeward cargo in some more or less distant market. But islands are not the only places necessitating "triangular" voyages. Take the case of a ship carrying coal to Gibraltar and going on to Bilbao for a cargo of ore, or again a vessel loading coal for Port Said and bringing home grain from Black Sea ports. But still there are many cases where even this arrangement cannot be made.

Many raw materials and foodstuffs come from sources where coal is not needed or is supplied from nearer coal fields. Moreover, in many cases British coal is carried out by vessels of other than British registry and frequently they carry goods back not to England but to Continental or Scandinavian ports. So on the one hand Great Britain has enjoyed the advantages which go with a large entrance of foreign shipping and, on the other hand, Northwestern Europe has shared in the benefits which transportation of coal brings to shipping.

Naturally when, owing to slackening production, coal exports had to be curtailed, the foreign ships were the first to suffer. England thus possesses a kind of shock absorber which protects her own shipping from all but the very worst shocks befalling the coal-exporting industry.

We have frequently referred to the benefits which coal exports bring to industry and shipping. Let us examine them more closely. In a recent magazine we read the following: "The effects of the curtailment of coal exports were felt as early as June, 1920, when Scotland and the North of England could not get enough pig iron from overseas because they were no longer able to supply the inward ore ships with outward freights of coal." Insufficient pig iron came in because not enough coal went out. This is just one example. It could be multiplied almost indefinitely.

It would be difficult to exaggerate the importance of coal exports for the shipping and manufacturing industries of the United Kingdom. Without coal exports the great bulk of the shipping bound for British ports and for Northwestern Europe in general, bringing wheat, cotton, timber, wool, etc., would be compelled to clear without cargo, and in ballast. That would mean that no outward freight would be earned in the majority of instances and consequently a very much heavier freight would have to be charged on articles of import, which would thereby be heavily increased in price to the consumer. These articles, as we have seen, are divided into two main groups: Foodstuffs and raw materials. Both have a vital bearing upon the industrial prowess of the importing country.

Foodstuffs react on wages. Ordinarily low prices for imported foodstuffs permit low wages. Labor and raw material make up the bulk of the industrial expense account. That means that coal exports, by lowering the price of both these items, are, to a large degree, responsible for the powerful position of British industries. With the growth of industries based upon imported raw material, carried on by laborers whose dinner plate is filled with the products of overseas countries, the growth of shipping goes hand in hand. Shipping is but the handmaiden of trade and trade helps industry. Unless the outward coal freight had lowered the freight on imported grain and other staple commodities it is doubtful whether the process of industrialization of the British Isles would have been as rapid as it has been. So coal is indeed the foundation of British success and coal exports have generously contributed thereto.

The succeeding article will show to what extent we may apply the British lesson to our own case.

The annual report of the Bureau of Foreign and Domestic Commerce says that Trade Commissioner J. Morgan Clements investigated mineral resources in China and submitted a report on coal. The Bureau has prepared reports on the Chilean and Argentine markets for fuel. The Russian Division has prepared reports on the Siberian petroleum shortage and substitute fuels and Polish coal resources.

Under the Microscope Coal Has Already Lost Much of Its Former Mystery—III*

On Each Spore Is a Durable Outside Shell Which, Being Distinctive, Can Be Recognized in Coal — It Enables Us to Correlate the Seam in Which It Appears — Bright Coal Is Clean, Light and Cokable; Dull Coal Is Ashy, Heavy and Less Cokable

By Reinhardt Thiessen†
Pittsburgh, Pa.

SPORE-EXINES have definite and clearly-defined characteristics, such as form, size and surface sculpturing. (Figs. 6, 7, 8 in the second installment of this article and Figs. 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 in this installment illustrate these.) Exines of different genera and, perhaps, of different species differ in sculpturing, size, thickness of wall and form. By means of these differences they can be readily distinguished one from another.

These spore characters have been so well preserved in almost all coals that the spores of one kind of plant can be clearly distinguished from those of another. By far the greater number of the spore-exines of any given seam are found to be of the same kind. In other seams two kinds, while in still others three kinds of exines may form the main bulk. It is quite noticeable that the predominating exines of any bed always differ in some way from those of any other bed.

In a given coal seam a spore-exine will occasionally be found that differs materially from those in other seams but does not predominate; nevertheless it may form a distinguishing characteristic of the coal seam in question.

*Article entitled "Recent Developments in Microscopic Study," presented at the meeting in Pittsburgh of the Coal Mining Institute of America, Dec. 9.

†Research chemist, U. S. Bureau of Mines.

FIG. 1. SECTION OF COAL FROM UPPER FREEPORT

This section is made horizontally so as to show the spores on their broad side. The magnification is 1,000 diameters.

Although not nearly all the coal seams have been examined to ascertain the character of the spores they contain there are sufficient grounds for the broad statement that as far as they have been examined each coal seam contains one or more kinds of spore-exines that are predominant and characteristic, or if not predominant they are characteristic of the seam. By this means any one seam may be distinguished from another. To illustrate this a few examples will be given:

The Pittsburgh seam (Figs. 2, 6 and 7 in the second installment) contains a type of spore-exine that is at once predominant and characteristic, that is, a large majority of the spores are of the same kind and found in no other seam. It is a small spore, only 15 microns across the disk (Fig. 6 of the second installment) and relatively thin.

The outer surface when highly magnified has much the appearance of the outer form of a brain (Fig. 7 of the second installment). In cross-section it has a corrugated appearance, due to the sculpturing. By means of this feature the spore may be easily distinguished from all other spores. As no other coal contains this spore, the Pittsburgh seam may be readily identified by means of it.

The Upper Freeport contains a smooth and somewhat larger predominant spore (Figs. 3 and 8 in the second installment and Fig. 1 of the present installment). It also contains in small numbers a much larger, thick-walled spore sculptured with coarse ridges. This is the predominant spore in the Lower Freeport (Figs. 2, 3 and 11). The predominant smooth-walled spore of the Upper Freeport appears to become one of the minor spores of the Lower Freeport. These two coals need much more study before positive statements may be made concerning them. There is as yet no certainty as to which will be proved the predominant spore in the Upper Freeport and which will be found the more frequent in the Lower Freeport. More type samples will have to be examined before a positive declaration can be made.

Brookville Seam Has Three Odd Exines

The Brookville seam has three kinds of spore-exines, which together form the largest bulk of the spore matter (Fig. 1 in the second installment and Figs. 4, 5 and 12 in this installment). Each of these spores is so decidedly different from the others and from those of any other seam that any one of them offers a ready means of identification. At a magnification of 200 diameters the different spores may be distinguished quite readily. Their specific characters, however, are much better brought out at 1,000 diameters.

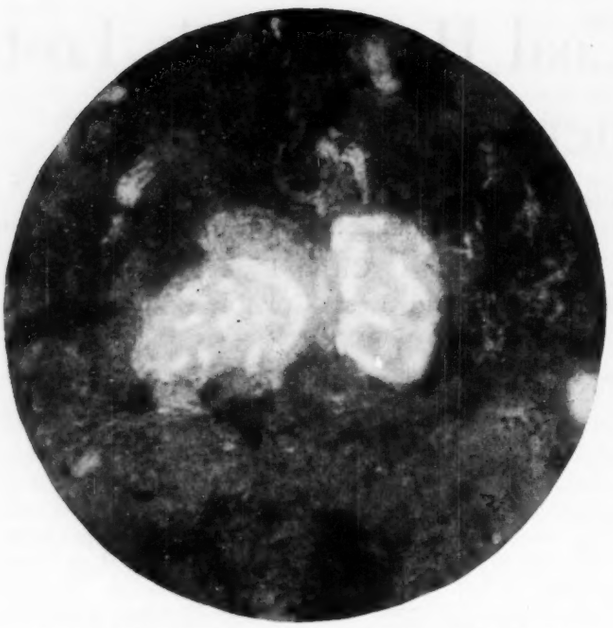


FIG. 2. THIN HORIZONTAL SECTION TAKEN FROM LOWER FREEPORT COAL SEAM

Characteristic spores at the high magnification of 1,000 diameters.

FIG. 3. VERTICAL SECTION FROM LOWER FREEPORT

Shows characteristic spore-exines on cross-section at a magnification of 1,000 diameters.

The most unusual one is a rather large exine with very peculiar processes, giving it an odd shape in cross-sections. In horizontal sections (Fig. 4) this spore-exine presents different appearances, all according to the manner in which it lies and how it was cut, yet no matter how located and how cut it always presents a somewhat similar appearance. A second type is studied with rather large echinate spines[1] (Fig. 5). It is between 45 and 60 microns, or about $\frac{1}{500}$ of an inch, in diameter. A third kind of spore-exine in horizontal section reminds one of Saturn and its rings (Fig. 12). It is a large, thin-walled exine with a thicker central part, the spore proper, surrounded by a much thinner outer zone forming a wing to the whole. The total diameter of the disks is between 80 and 90 microns or close to $\frac{1}{250}$ of an inch. A fourth spore-exine is found quite abundantly in this coal. It is relatively rather small and in many ways is similar to the single predominating exine in the Upper Freeport.

A number of other coal seams in Pennsylvania and in Kentucky, Alabama, Illinois and Iowa have been examined. Every one of them has been shown to contain spore-exines as characteristic as those shown. By this means any of the coals could be identified,

[1]Spines like those on a sea urchin.—Editor.

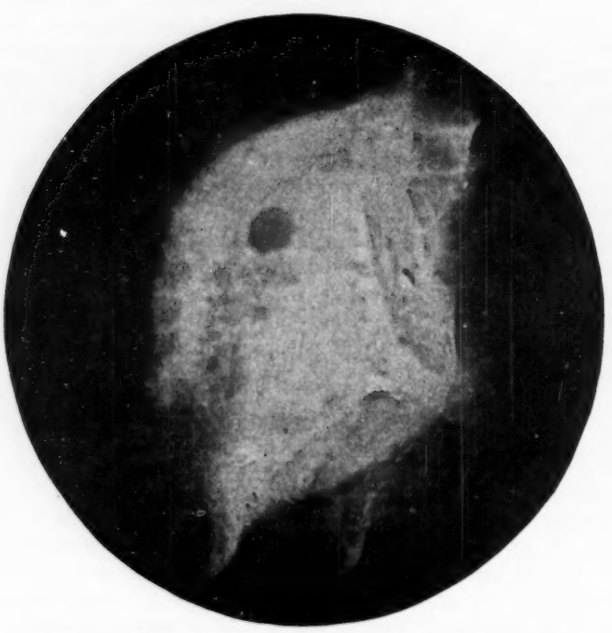


FIG. 4. HORIZONTAL SECTION OF COAL TAKEN FROM BROOKVILLE COAL BED

Note the peculiar processes on this spore-exine. A magnification of 1,000 diameters makes the detail of this exine quite clearly apparent.

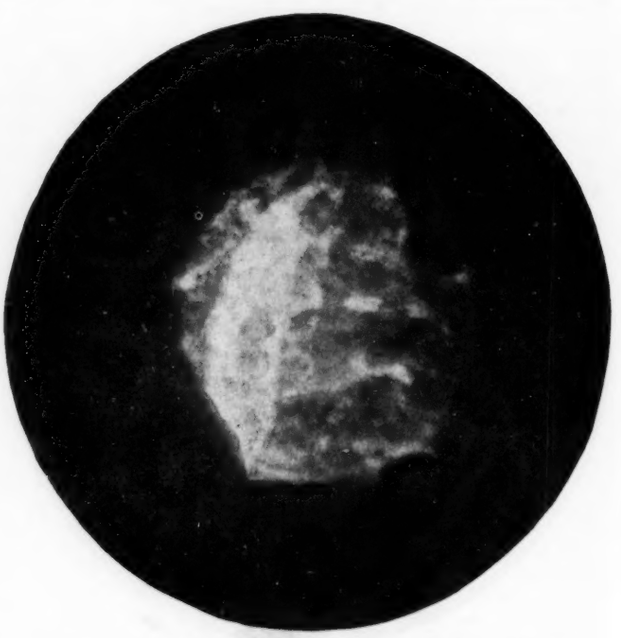


FIG. 5. BROOKVILLE BED HAS EXINE SHAPED LIKE A MODERN SEA URCHIN

This horizontal section of the Brookville bed at a magnification of 1,000 diameters shows an exine which is apparently peculiar to that bed and so identifies it.

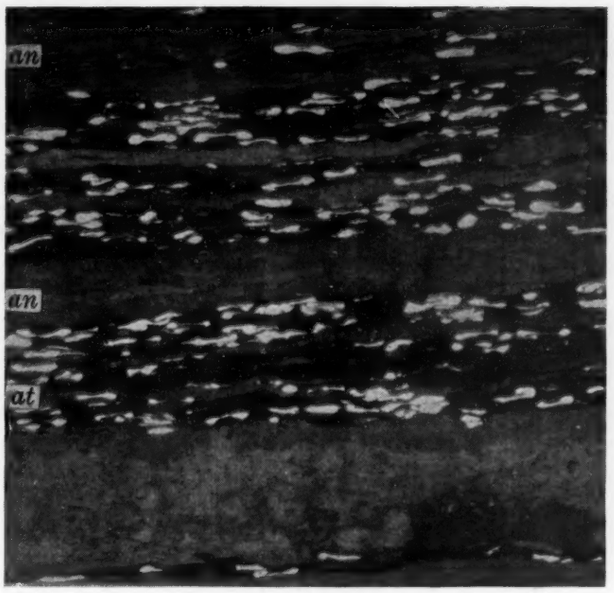


FIG. 6. COAL FROM THE YAGGER BED OF ALABAMA IN VERTICAL SECTION

Anthraxylon noted by letters *an* and attritus by *at*. A spore-exine, which is broad and thin-walled, with smooth surfaces, is found in this seam and thus far in no other.

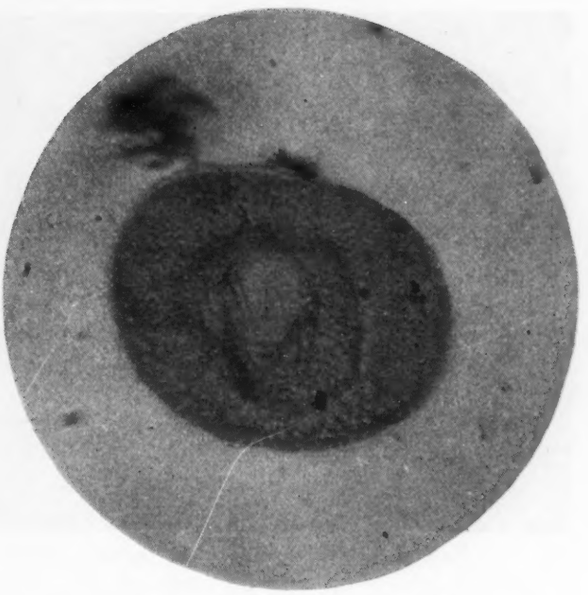


FIG. 7. SPORE-EXINE OBTAINED AT BUXTON, IOWA

Broad view of cross-section of this exine magnified 1,000-fold in all directions.

some at first sight, others after more careful study. A spore, for example, in the coal from the Black Creek Bed in Alabama has such decided characteristics, both as seen in cross-section and in horizontal section, that it can easily be recognized without mistake wherever found (Figs. 6 and 13). This identical spore-exine is found in the "C," or Kellioka, bed of Kentucky. This at once raises the question whether that bed of Kentucky and the Black Creek bed of Alabama do or do not represent the same coal seam.

The predominating spore-exine of the Yagger bed in Alabama also is of such a shape and appearance that it can be distinguished readily from any other. As seen in cross-section, it is a broad, thin-walled exine with a smooth surface. In no other coal seam have spore-exines been found resembling this one.

A bed at Buxton, Iowa, contains two spore-exines either of which is decidedly different from any other spore-exine yet found. At first sight one appears quite similar to that of the Black Creek bed in Alabama, but at close inspection and when seen on the flat side, a marked difference is shown (Figs. 7 and 8). The other is the exine of a megaspore with three large air sacks or wings (Figs. 9 and 10).

A number of other spore-exines could be shown, every one of which has characters as specific and as different from any other as those shown, but enough examples have been given to show how full of possi-

FIG. 8. CROSS-SECTION OF SPORE-EXINE IN FIG. 7 MADE IN ANOTHER PLANE

It is impossible to recognize these exines when viewed at right angles to that at which the exines were first seen.

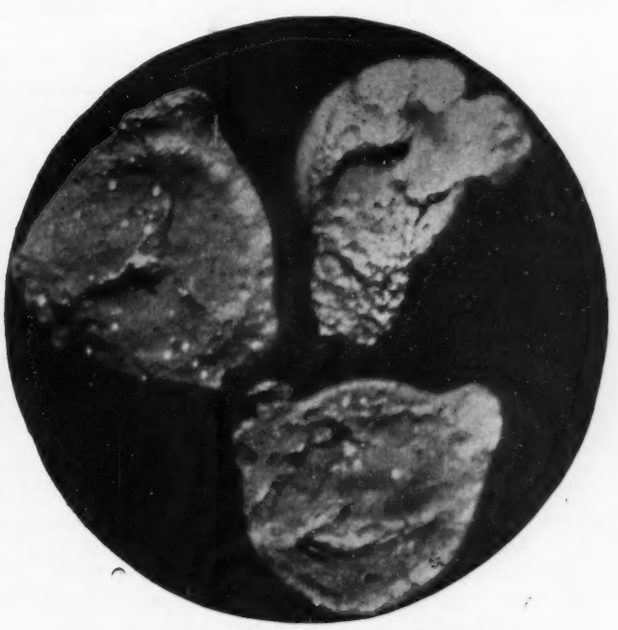


FIG. 9. MEGASPORES IN BUXTON COAL

A broadside view. These spore-exines in the coal have each three long and delicate wings, or air sacs, but these unfortunately were broken in removing them from the coal. The reader will realize that they are megaspores, or great spores, when he learns that large as they appear in the illustration they are magnified in all directions only thirty times.

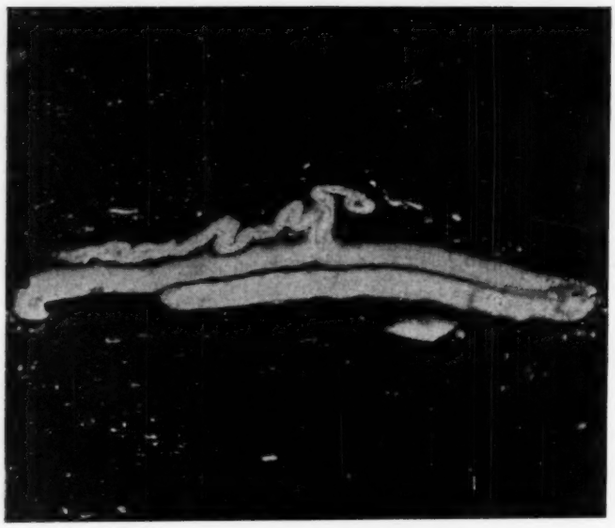


FIG. 10. CROSS-SECTION OF EXINE IN FIG. 9
This view shows one of the three wings in cross-section. Magnification is 100-fold in all directions.

bilities is this line of attack on the correlation of coal seams. In cases where one or a few exines would fail to warrant a sure correlation, more might be studied. In the correlation of rocks many different fossil plants are often required to determine a correct stratigraphic position. The same breadth of inquiry may be necessary in obtaining a proper correlation of coal seams.

High-Ash Coal Heavier Than Coal of Low Ash

It has long been recognized that a high-ash coal has a greater specific gravity than coal of low ash. This was definitely determined by Coxe in 1892, in connection with boiler tests, when specific-gravity determinations were made by float-and-sink methods to study the possibilities of clean separations. In 1910 Porter, of the Canadian Department of Mines, determined that the specific gravity of clean coal is from 1.28 to 1.37. But no true relationship between the kinds of coal was established until Lord in 1905 and 1906 carried on specific-gravity investigations on coal at the United States fuel-testing plant at St. Louis.

Lord determined the specific gravity of "picked-out clean coal" and of coal of average quality. In eighty-one pairs of samples the clean coal had a lower specific gravity than the coal from which it had been separated. Further analyses were made with respect to ash and sulphur, and in every case the tests showed a rapid increase in impurity of the coal with increase of specific gravity. The same experiments showed that the finer the coal was crushed, the more complete would be the mechanical separation of the heavy impurities from it.

Work of this kind was later extended by Nebel of the Illinois Engineering Experiment Station in 1916. Nebel made strict distinctions between "bright coal" and "dull coal," as defined by Thiessen, in 1913. The constituents now called "bright coal" and "dull coal" are now more precisely called "anthraxylon" and "attritus" (Figs. 7 and 13) respectively. In every case the specific gravity of the "dull coal" was found to be greater than that of the "bright coal" and the difference in the ash content is even more striking.

These findings are checked up by microscopic investigations. The "bright coal" is seen to be cleaner and to contain fewer mineral constituents than the "dull coal"; except in some cases where there is more finely disseminated pyritic matter in the "bright coal" than in the "dull coal."

Studies along these directions are now carried on by the Illinois Engineering Experiment Station in co-operation with the Bureau of Mines in an endeavor to separate the different kinds of coals by means of float-and-sink methods. In the laboratories at Pittsburgh experiments on float-and-sink methods are now being carried on.

It has also been determined that the "bright coal" invariably yields a better coke than the "dull coal" of the same seam. Even when the coals are "non-coking" the "bright coal" yields a fairly good coke, while the "dull coal" shows inadequate coking qualities.

In England this work has been recently taken up and experiments are being carried out to determine not only how to separate the mineral matter by the float-and-sink method, but how to separate the different constituents of coal, such as "bright" and "dull" coal itself, and to ascertain their relative coking properties. Blyth and O'Shea carried on such experiments with considerable success by means of a solution of chloroform and alcohol. But these two investigators did not differentiate closely enough between the bands of "bright coal" and "dull coal" so as to ascribe definite characteristics to each.

British Find Four Separate Kinds of Coal

Lessing, on the other hand, followed the suggestions of Stopes closely. Stopes sees four different kinds of coal, each one represented by bands; namely fusain, durain, clarain and vitrain. Fusain corresponds

FIG. 11. VERTICAL SECTION FROM LOWER FREEPORT SEAM
Shows thin bands of anthraxylon (*an*) and attritus (*at*).

to mineral charcoal and durain to dull coal, but the bright coal is divided into two groups, clarain and vitrain. Nothing comparable to vitrain appears to be found in this country. From a large number of samples Lessing finds average ash content of fusain to be

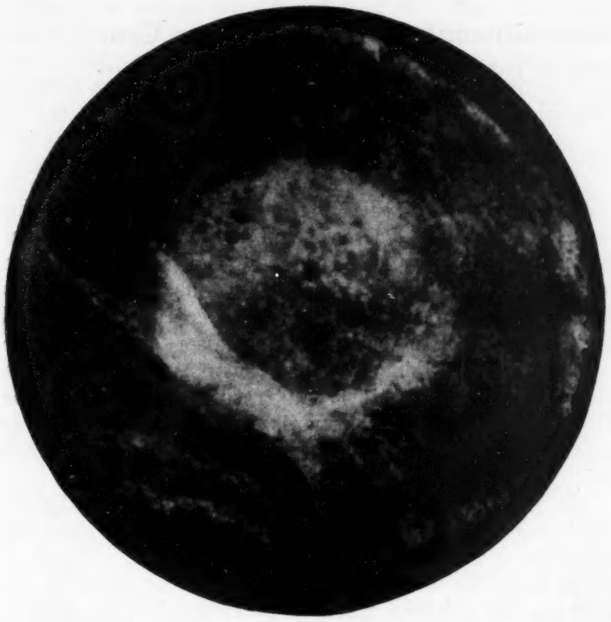


FIG. 12. HORIZONTAL SECTION, BROOKVILLE COAL

Note ring type of spore-exine. It has been magnified 1,000 times in all directions.

15.59 per cent, of durain 6.26 per cent, of clarain 1.22 per cent and of vitrain 1.11 per cent. He also finds notable differences in the coking proportion similar to those already noted.

Following up Lessing's results, Best and Findley tried to separate the best of the coals by float-and-sink methods, using various liquids of different specific gravities with a view to obtaining the best coke and

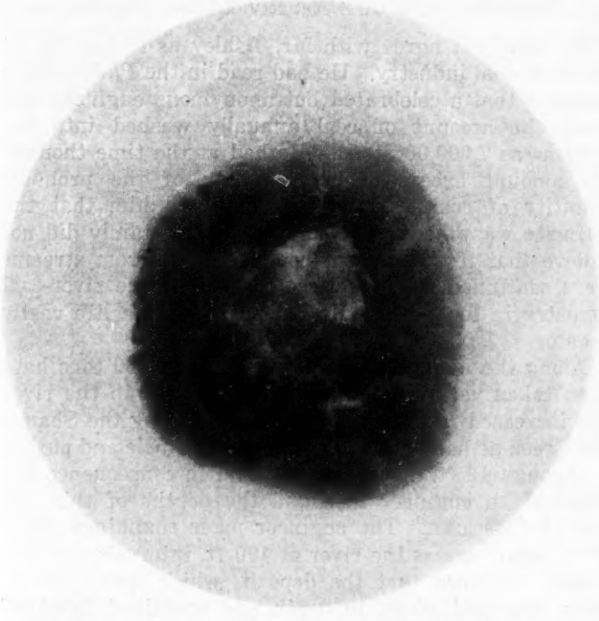


FIG. 13. SPORE OF YAGGER COAL SEAM

An isolated spore-exine from the Sipsey mine. Broadside view; magnified 1,000 times. (Some people place the Sipsey mine in the Black Creek seam.)

submitting the inferior grade to low-temperature distillation in order to obtain fuel oils and "coalite." Chloroform was found to be the most suitable liquid on account of its low surface tension. Solutions of any desired specific gravity were obtained by mixing the chloroform with different parts of alcohol. The first separation was obtained by a solution of 1.30 specific gravity. That part sinking in the solution at 1.30 specific gravity was again separated by a solution of 1.48 specific gravity.

Whole sample { Floating in 1.30 sp. gr. / Sinking in 1.30 sp. gr. { Floating in 1.48 sp. gr. / Sinking in 1.48 sp. gr.

Small Part of Coal Has Large Part of Ash

The authors draw the conclusion that it is possible to separate any coking slack into two or more fractions: (1) An almost ash-and-sulphur free fraction for the production of a superior coke. This fraction varies from 55 to 76 per cent of the whole sample. Its coke would yield 3 per cent of ash and well under 1 per cent of sulphur. (2) A homogeneous coaly substance suited for low-temperature distillation yielding "coalite." The weight of this fraction varies from 17 to 34 per cent of the weight of the coking slack; it would yield a coalite containing 7 to 12 per cent of ash. In addition were obtained per ton 20 to 25

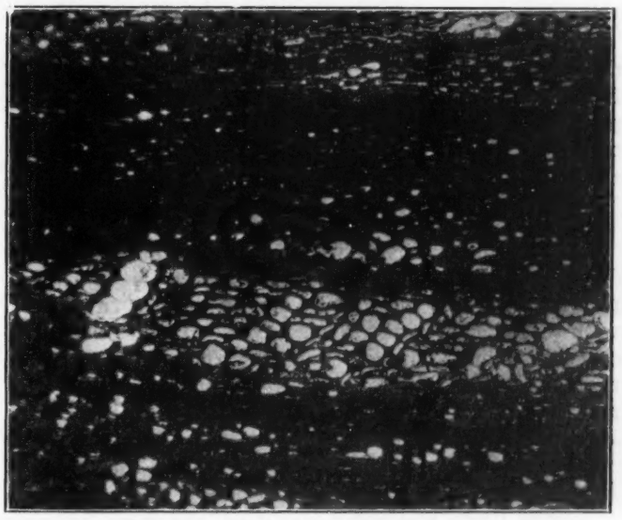


FIG. 14. SECTION OF ANTHRAXYLON OR BRIGHT COAL

Shows well-preserved cell structure, including resinous matter. Magnification 155.5 diameters. Sometimes the resin is not translucent and looks black. At others it lets the light through and appears white. Mr. Thiesen finds it hard to explain this inequality and admits that it is one of the problems for the future to solve.

gallons of oil, from 11 to 15 lb. of sulphate of ammonia, and 7,000 cu.ft. of rich gas.

(3) A fraction of the whole weight of unwashed material, 20 to 26 per cent, which contains about 55 to 60 per cent of coal and from 45 to 60 per cent of dirt to be treated in a shale retort.

Should the process prove expedient, a closer definition could then be made as to what constitutes a good coking coal and what should not be used for coking. Such a process also would take care of the finely-disseminated pyrite more or less present in the anthraxylon of all coals and which, like the inherent ash, cannot be removed by any ordinary method of coal washing.

(To Be Concluded in Next Issue)

Advantages of River Coal and Pulverized Anthracite Canvassed by Engineers

River Coal Is a Riffle-Washed Anthracite, Some Running as Low as 15 Per Cent Ash—Perhaps 90 Per Cent of the Coal Drawn in by Suction Pipes Is Lost—Ring-Roll Machines Experience Much Trouble in Pulverizing Some Anthracites

By R. Dawson Hall

THAT active organization known as the Engineers' Club of Philadelphia never had a better attendance or a more interesting symposium than at the meeting held in the club house Dec. 3, when the subject was river coal and the use of and preparation of pulverized anthracite. With ex-president Joseph A. Steinmetz in the chair and standing room only, the meeting opened with an address by George H. Ashley, state geologist of Pennsylvania, on river-coal resources.

He stated that from the rivers, streams and overflowed flats of Pennsylvania 2,000,000 tons were taken in 1919 and possibly as much in 1920. The name "river coal," was perhaps misleading, as some of the best coal came not from rivers but from smaller streams. Hence "stream coal" would be a better name.

Of those 2,000,000 tons about 750,000 tons came from the Shamokin region and 400,000 tons were obtained from the Susquehanna near Harrisburg. The whole product from that river and its tributaries was 1,586,000 tons. In addition 120,000 tons came from the Lehigh region and 235,000 from the Schuylkill region.

River Coal is Riffle-Washed Product

This coal is gradually becoming appreciated, and it is dawning on the public that river coal is a washed product having a lower ash content than is customary with the finer sizes of anthracite. For thirty years this coal has been recovered from the river, and much of that time the selling price ran between 50 and 65c. per ton. The coal from the tributaries which were later invaded by the river-coal operators was found to be coarser, and therefore of greater value than that dredged from the rivers.

A sand pump was commonly used, the pump drawing up water and coal from the river bottom and discharging the material on a screen. The principle adopted was to regard the material which went through the screen as sand and what passed over it as coal. At places small dams were built in the streams to impound the traveling coal, so that it could be the more readily pumped. At other places clamshell dredges were used, and in the lands periodically subject to overflows the coal deposit was shoveled into railroad cars.

As to the future of the industry, Mr. Ashley quoted from the rough-and-ready reconnaissance made by C. W. Webber, of the U. S. Geological Survey. The speaker took care to say that in the sense in which "survey" is generally used Mr. Webber would not claim title to use that word for his rapid inquiry. Mr. Webber, conservative in his estimates as United States geologists invariably are, came to the conclusion that the deposits at the rate at which they were now being exhausted would last four or five or at best ten years. There were perhaps 20,000,000 tons available and perhaps there might be 25,000,000 tons.

J. P. Edwards, of the Jonathan Coal Mining Co., who spoke on "River and Creek Coal," said that the rejects from the breakers of the 350 collieries in the anthracite region probably totaled 500,000,000 tons. Much of this coal had been run into the rivers, and coal companies had been compelled to pay farmers large sums for the damages thereby done to their farms. River coal, he declared, is much better than freshly-mined coal. The Harrisburg Light & Power Co. from its inception has used some river coal and during the last four years has used it exclusively.

Mr. Edwards said that 8,900,000 tons of fine coal were used yearly from all sources. Where this came from the breakers it ran from 18 to 30 per cent ash. Where it came from the river, owing to the jigging effect of the current, the ash was found to be reduced to from 15 to 18 per cent. Whereas bituminous coal such as was used by plants along the rivers would run 14,300 B.t.u. and the anthracite rice and barley as it came from the breaker would run only about 11,000 B.t.u., the river coal of small size would be found to give 12,250 or 12,800 B.t.u.

He instanced a shipment of 7,000 tons which averaged 13 per cent ash. He gave an analysis of river coal as follows: Moisture, 3.42 per cent; volatile matter, 7.95 per cent; fixed carbon, 73.11 per cent; ash, 15.52 per cent. The thermal equivalent of this coal was 12,250 B.t.u.

Predicts Long Life for River-Coal Mining

He could not agree with Mr. Ashley as to the life of the river-coal industry. He had read in the *Philadelphia Inquirer* that a celebrated but anonymous engineer had rated the amount of coal annually washed into the streams as 7,000,000 tons. He had at the time thought the amount excessive, but a study of the probable quantity of coal thus wasted convinced him that the estimate was likely to be correct. He certainly did not believe that if the present coal winnings from streams were continued we should see the end of the river-coal industry in ten years. He believed it had a life vastly greater.

Along the Mahanoy for eight years 300,000 tons have been taken yearly, but the amount of coal in the river has increased rather than decreased. Along the Shamokin Creek he had on one occasion taken a pole and pushed it through 10 ft. of coal deposit and in consequence had engaged an engineer to sound the depths of this coal and plot its area. The engineer made soundings about 20 ft. apart across the river at 100 ft. intervals and as a result concluded that the deposit, which was 1,000 ft. long, averaged 10 ft. in depth and contained 2,000,000 tons. Consequently Mr. Edwards closed an option on the coal to be found in an eleven-mile stretch of Shamokin Creek.

At Reed Station he had established a dredging point where a 1¼-cu.yd. clamshell bucket having a 25-ft. sweep lifted the coal from the stream to a building where it was cleaned and stored in large bins. By this stationary equipment he had removed 140,000 tons of coal, taking as much as 400 tons a day. The coal was brought in by the river as the bucket removed it. There are now twenty-three plants taking coal out of the Shamokin Creek. At Gordon, on the Mahanoy Creek, a 3½-cu.yd. dragline excavator has been established by the Jonathan Coal Mining Co. which will lift 3.2 tons from the creek at a single mouthful. The dragline excavator will have a 300-ft. radius. The whole equipment will cost $100,000. This is the measure of the faith that Mr. Edwards has in the life of river-coal deposits.

He said that river coal was used by all the plants along the rivers where the coal was found, the freight rate of bituminous coal exceeding that of river coal by about 80c. In introducing the next speaker the chairman declared that the self-supplying hole at Reed Station made the "widow's cruse" of oil "look like a piker."

G. R. Delamater of the Anthracite Production Corporation sided with Mr. Edwards in prophesying a long life for the river-coal industry. He himself in earlier years had believed that the tale of it would be completely told in a few years—perhaps no more than five—but the personnel of his company had changed their views as evidence pointed to a much longer and larger future. He took issue also with those who would say that about 90 per cent of the coal in the creek was being recovered. He would rather say 2 or 3 per cent of the solids are picked up by the suction dredge, half of which goes back into the creek, but what returns to the river bed is by no means all sand. About 65 per cent of the reject in one of these plants was found to be sand; the rest was coal. But much of the material is not lifted from the river at all. With Wilfley tables and electro-static machines the whole of the coal taken out of the river could be saved. The objection to the latter device was the fact that the coal had first to be dried, but these machines, said Mr. Delamater, used little power to maintain the electro-static condition. They not only saved the coal satisfactorily but they cleaned the sand, which could then be used for concrete. The sand in the rivers contained too much coal. A little coal will spoil a concrete aggregate.

Every Year River Coal Is of Smaller Size

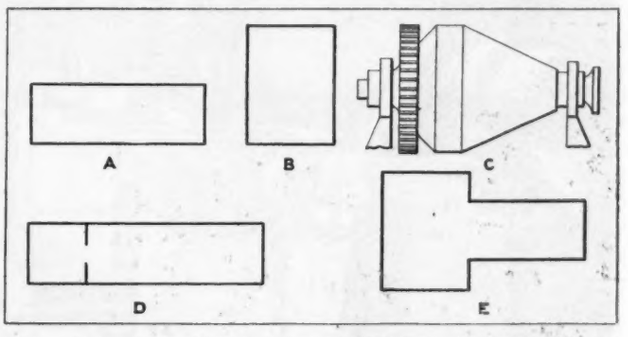
River coal, said Mr. Delamater, is getting smaller year by year, but after heavy rains larger coal is obtained, owing to the scouring effect of the floods. There is too much sand in coal from rivers, and this is objectionable, as it cuts traveling grates severely. River coal should be better prepared than in present practice.

The chairman declared himself more than pleased with the prospects of river coal and proposed that the anthracite-saturated streams be carried through the fire-boxes of boilers, using the coal for fuel and the water for steam.

W. S. Quigley, of the Quigley Furnace Co., said that he was still experimenting with the Philadelphia Rapid Transit Co.'s equipment, and he was unwilling to make any report. So far the furnaces had at no time run more than three days consecutively. There was no trouble in pulverized-coal furnaces when bituminous coal was used, but anthracite burning was still in the experimental stage.

R. M. Vail, a consulting engineer, who is making a specialty of crushing machinery, said that there were two ways of comminuting material. It might be either crushed or abraded. The tube mill is an example of the crushing type, the balls falling on the material and cracking it along its cleavage planes. The mill, of course, does in a degree abrade the coal, but its main effect is one of cracking or crushing.

The tube mill has the advantage that it takes up less floor space than the roll mill for any given capacity. By using tube mills in closed circuit the most economical crushing is obtained. The material in the tube mill working under a closed circuit is discharged before it is all ground to the required fineness. It is then classified, and the oversize goes back to the mill. In this way the well-ground material does not cushion the blows of the balls, and there is no needless comminution of the undersize.



CROSS-SECTION OF DIFFERENT TUBE MILLS

A is the original tube mill, long and of small diameter; B is one provided with a greater fall; C is an exterior view of a Hardinge mill having a cylindrical center and two frusta of cones; D is a tube mill of equal diameter divided by a diaphragm, the coarse grinding being done in the first compartment; E is a tube mill of two different diameters, the fine grinding being done in the second compartment.

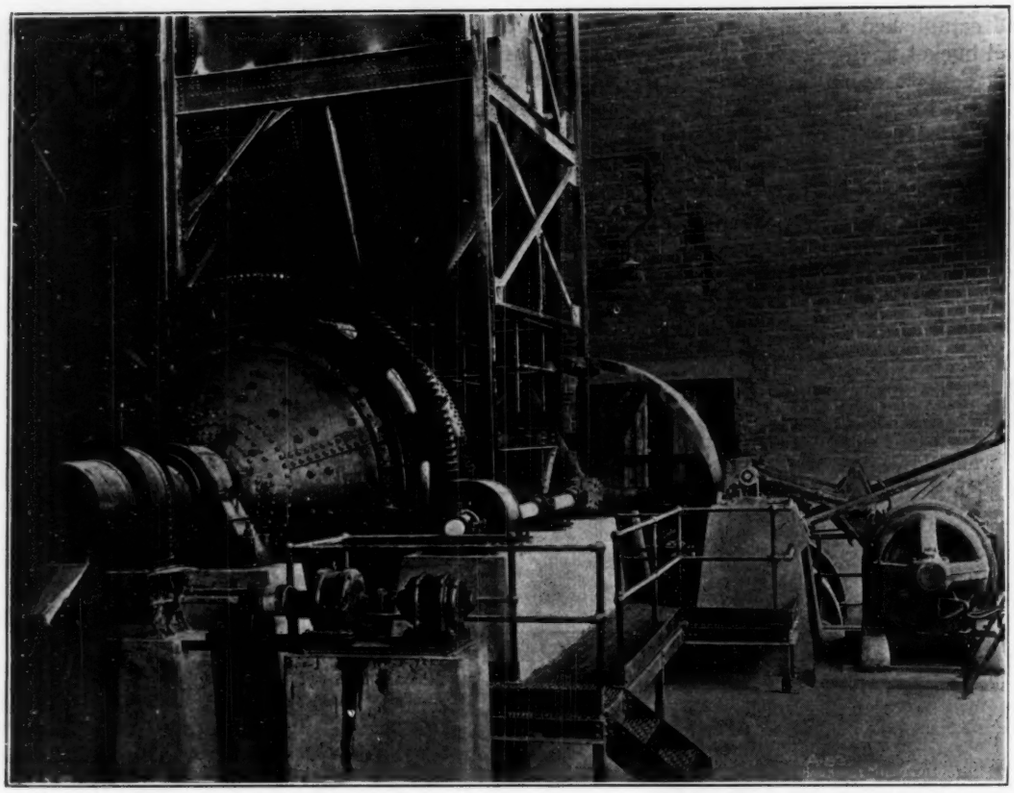
Crushing Mills Needed for Anthracite

In discussing the various types of mills Mr. Vail passed over the buhrstone and Chilean mills because these are of low capacity. The ring-roll mills, such as the well-known Fuller, Raymond and Bonnot types, give excellent satisfaction with bituminous coal. With anthracite, however, there is excessive abrasion of the mill, and until alloys are used which lessen this abrasion, the ring-roll mill will not give satisfaction with abrasive materials.

The first form of tube mill had a longitudinal section of rectangular shape, the length being much greater than the height. This length did not seem necessary and tube mills were made with the height slightly greater than the length. The Hardinge mill consists of an extremely short cylinder flanked by two frusta of cones. The illustration herewith shows the actual shape. Whether the coning assists is a matter of debate, but it is certain the mill gives good results.

E. W. Davis, who has made a most careful study of the mill, declares that the balls should be so carried up the side of the mill as to give a maximum fall for the cascading balls. The mill makes 20 to 27 revolutions per minute. There is little abrading action. The material is broken by concussion. When a ring-roll crusher gets out of repair it must be stopped. Pulling it to pieces is heavy work. Large castings have to be inserted.

With the Hardinge mill the balls can be run in with the feed while the mill is running. The maintenance of the mill at its utmost efficiency is not accompanied by



Hardinge Mill

The mill grinds the coal for the most part by crushing, the balls falling on one another in a cascade and pulverizing the material. There is some abrasion but hardly any on the mill itself. When the balls are worn they can be replaced without stopping operation. The mill can be used to pulverize either hard or soft material.

frequent shutdowns and much expense, so it seems best adapted for any material which acts in a manner similar to the rock that has to be crushed in Western mines.

Another mill having a rectangular cross-section longitudinally is sometimes used. This has a diaphragm near one end, so that the fine material may pass through the opening in the center of the diaphragm and be comminuted in the second and longer compartment. Another mill has a T cross-section. The vertical rectangle feeds into a horizontal rectangle, but the difficulty is that for a given speed there is a given radius which is more efficient in pulverization, and here are practically two mills of different radius on the same shaft with the same angular rotational speed.

Old-Fashioned Tube Mill Not Economical

Comparing the Hardinge with the rectangular tube mill, Mr. Vail said that the cement works still adhered to the mill of rectangular section. The cement mills want 80 to 85 per cent of their product to pass through a 200-mesh screen, but they also want appreciable quantities of material that will pass a 250- or a 1,000-mesh screen. So they do not care if there is some loss because of excessively fine grinding. With the pulverization of anthracite for boiler use, however, there is no desire to obtain material of unequal fineness. In fact, the aim is to get flour of uniform size throughout. So the Hardinge mill with the closed circuit seems to be the combination which meets the need.

J. R. Wyllie, of the M. A. Hanna Co., said that the Fuller and Raymond grinding machines, which had given such success in the pulverization of bituminous coal, had not proved themselves able to pulverize the harder kinds of anthracite coal without an excessive charge for repairs. He said that taking down these heavy machines when parts wore out was a job most distasteful to modern labor. The intention was to use a Hardinge mill which would give them a product 70 per cent of which would pass through a 200-mesh screen. The product should contain at least 90 per cent of such material. They expected to use a Clark rarefied dust trap and a filter system.

At Lykens there was no trouble with the Fuller mills, of which the company has four. The difficulty with river coal is that it is apt to be mixed with boiler ash, which is highly abrasive.

Action of the Baltimore & Ohio R.R. in prohibiting bunkering at its piers in Baltimore harbor is calling forth considerable protest on the part of operators, as the practuel. Facilities are available for bunkering in the stream, but as that process results in an additional cost of $1.25 per ton, many vessels go elsewhere for their coal, it is said.

The Norfolk & Western and Virginian railroads have withdrawn their request to cancel deliveries of coal by their barges in Norfolk harbor. These roads filed a tariff cancelling delivery of coal by their barges, thereby requiring certain consumers at Norfolk to get their coal at the piers. The Chamber of Commerce and twelve firms protested against the tariff, claiming that it was a discrimination since the railroads delivered coal to consumers who had sidetrack facilities. The railroads apparently were impressed with the strength of the complaint and withdrew the tariff of their own volition.

Indiana miners and officials of a minor character of the United Mine Workers of America are reported generally to concur in the statement issued recently by John L. Lewis, president of the United Mine Workers of America, to the effect that the national organization had gone on record against any reduction of wages for the mine workers. Mr. Lewis said that as far as the miners are concerned there will be no backward step, that a definite and substantial policy had been decided upon and that the men would stand behind President Lewis in his attitude. "Miners could not afford to take any reduction in wages at this time and will not do so," said Roscoe White, board member of District No. 11. "Miners are not receiving excessive wages in comparison to the costs of living; if correct comparisons are made it will be found that they are the poorest paid men in the country."

Coal Mining Institute of America Studies Present-Day Operating Problems—I*

When Is Mine Storage of Coal Justified?—Should Operators Purchase Power?—What Faults Are Found in Cutting Machines?—Will Standardization Hinder Development?

By R. Dawson Hall
New York City

PRACTICAL problems of interest to coal men absorbed all the time occupied by the Coal Mining Institute of America at its meeting in Pittsburgh, Dec. 8 and 9. The only digression was Dr. George H. Ashley's address on "The Geology of Oil and Gas," a presentation of the subject as exact and scholarly as it was interesting. It is passed over here as not being germane to the coal industry. It was the only technical material presented to the morning session, which, though it continued late, was still wrestling with the election when the meeting closed.

At the beginning of the afternoon session Dr. Kurt C. Barth, of the Barrett Co., showed some interesting moving pictures on the preservation of timber by various degrees of coal-tar impregnation. He showed how framed timber might be protected by spraying it with coal tar, especially in those parts which are most subject to decay—the mortise and tenon. This method of preservation can be used for fence boards and posts, and the resistance of telegraph poles and fence posts to decay can be greatly increased by dipping their lower ends in a bath of coal tar. However, if the whole timber is submerged in this material or, better yet, receives two baths, one hot and one cold, still better results are obtained.

When Does Storage at Mines Pay Dividends?

With Joseph Knapper, state mine inspector, of Philipsburg, in the chair, consideration was given to Questions 1 and 2.

Question 1. To what extent is the storage of coal at the mine economically justifiable?

H. H. Stoek, dean of the college of mining of the University of Illinois, at Urbana, said that in southern Illinois many coal companies had during the last year stored some coal at the mines, one mine having a storage capacity of 700,000 tons. He wished to emphasize that the purpose of storage of coal at the point of production was not to take care of the irregularity in the demand between winter and summer; the storage facilities were merely intended for the purpose of avoiding day-to-day irregularities and to enable the mines to run one whole day instead of two halves when insufficient cars were supplied. It was not, he said, the province of the mine to store coal, and the consumer should not be led to believe so. The consumer himself should furnish the storage needed, as it was useless to store coal at the mine till the winter, for at that time cars were almost sure to be busier than in the summer months.

However, in passing it may be said that it is interesting to note that this year this condition does not exist. Car supply is now almost adequate, whereas in the summer it was not. The price is, however, likely to be such that there would be no profitable market for such coal as had been put in and out of storage and subjected to the risks of spontaneous combustion and to the inevitable degradation that accompanies the double handling. This would especially be true if the coal, as is almost inevitable, became wet and then froze in the pile, or, being wet, froze in the cars. Other discussions were furnished by Edward Steidle, R. D. Hall, James W. Paul and E. S. Moore.

Railroad Cars Arrived as Afternoon Ended

Mr. Ferguson, of the Pittsburgh Coal Co., declared that the experience of his company in the storage of slack was discouraging. A Connellsville member said that storage helped to keep mines running in accord with the promises of the mine executive. On one occasion the mine with which he was connected worked till 4 p.m. without receiving a single railroad car. Though the cars did not arrive till that hour the output for the day filled twenty-six railroad cars because of the storage facilities provided.

Another member declared that storage for one day's run helped to steady cutting, as it is possible when storage is provided to clean up the cut and give the machinemen a place to work. Following some remarks by Thomas A. Mather, of Tyrone, Joseph Knapper declared that in his district no storage for coal was at any point provided. He said, however, that in the Blossburg region the coal was not subject to spontaneous combustion and could, therefore, be stored almost indefinitely, though storage is unknown. However, there is much boney coal. A pile of this waste material had been accumulating at the mine of the Morris Run Coal Mining Co. during some fifty-five years of operation until it covered several acres. This year anthracite men cleaned and shipped it and declared that the heating value was fully half that of good coal.

Shall We Purchase Power or Make Our Own?

Question 2. What is the difference between the cost of purchased electric power and plant-produced power as evidenced by actual costs based on at least a year's operating costs?

Strange to say, no one came forward with an answer. Are we to believe that no one in these years of cost analysis has been wise and diligent enough to find what the difference between the two really is? Everyone who spoke in this discussion either professed himself unable to answer it in the terms of its submittal or gracefully sidestepped the question. One, if I recall rightly, did say he had the facts or some facts at home.

H. H. Stoek, on being asked for comment, said that

*This article presents the technical discussions which took place at Pittsburgh. The business of the meeting and the speeches at the banquet were described last week on pages 1221 and 1222 in an article entitled "Coal Mining Institute of America Holds Its Most Successful Session."

the operator should in self-defence see that he is not "hooking up" with a power company that has taken on more business than it can carry. During the war the coal plants so generally found themselves hampered by the inadequacy of the equipment of the utility companies supplying them that they had to apply for priority, which was conceded them. Mr. Stoek added that Eugene C. McAuliffe, of the Union Collieries, was introducing water-generated power into his mines in place of power generated from the coal produced at his own plant.

L. C. Ilsley, electrical engineer of the Bureau of Mines, said that only companies able to have central power plants of their own could hope to attain power costs as low as those offered by public-utility companies. Small plants, being run by men who were not primarily electrical experts, were more than likely to be run uneconomically.

Power Companies Make Too Many Commitments

Nicholas Evans, state mine inspector, of Johnstown, Pa., declared that central power plants were undertaking more commitments than they could hope to take care of. As a result, too often fans were shut down, and disastrous accidents occurred. However, even with a privately-operated plant, this same class of accident was quite as much or even more to be apprehended. Joseph Knapper and Rush N. Hosler spoke on the use of purchased power at the mines of the Morrisdale Coal Co., whose pumping problem, for a bituminous company, was unusually heavy, five tons of water having to be pumped for every ton of coal obtained.

A. B. Kiser, chief electrician of the Pittsburgh Coal Co., said that his concern was in favor of further purchases of central-station power, and was steadily increasing the number of mines thus equipped. Several others spoke in favor of it and not a single voice was raised against it. With E. S. Moore presiding three more questions were presented, beginning with:

Question 3. What is the best means of educating the miner and proving to him that his lot is not so bad after all?

Edward Steidle said that the children in mining villages should be shown the advantages the mine workers enjoyed and some of the disadvantages of work in the cities. Francis Feehan, formerly a district president of the United Mine Workers of America and a supervisor of the state workmen's compensation board, declared that in his belief nothing will better convince the mine worker that the mine is the place to work than the full dinner pail.

Mining Pays Better Than Skilled Trade

He said that most miners stayed at the work because they preferred it to all others. With less exertion they could make more than could be made even where working as skilled workmen at trades demanding such skill. Unfortunately the boys drifted away. There was no work at the mine for a boy till he was sixteen, and no school as a rule for him when he reached the age of fourteen. He is, therefore, obliged to go to other communities, and later he draws the parents away, through the affection that his mother bears him. If conditions were made more attractive around the mines the boy would be apt to stay, or, even if he went, he would be likely to come back when he reached the age limit.

The presiding officer then presented the following:

Question 4. Are accidents per ton of coal mined being reduced in proportion to the energy and money expended for safety work?

In discussing this question F. W. Cunningham said that the accidents in the state up to October of this year were lower than in any other year, and Mr. Stoek remarked that life-insurance rates for mine workers had been reduced in the last twelve years to one-half or even one-third of what they were, except in the case of firebosses. The sentimental schedules of past years are beginning to give way to scientific statistical schedules. Evidence is pointing plainly to the fact that the mine hazard has been overrated in public opinion since the time when the treasures of mines were supposed in popular fancy to be guarded by dragons and the workings peopled with wraiths.

Rush N. Hosler said that with the two reductions given in insurance, one for safety provisions and one for any favorable individual experience of the company receiving insurance, such a large premium was put on a safe mine that safety work certainly paid well all those who undertook it.

How Hot or How Cold Is a Coal Mine?

Following this discussion Mr. Moore offered:

Question 5. What is the range of temperature in a coal mine?

William Nisbet, chief mine inspector, Keystone Coal & Coke Co., declared that the temperature of a mine lies anywhere between zero and 60 deg., with the temperature at the face ranging as a rule from 50 to 55 deg. J. H. McGinnis, assistant foreman, Ford Collieries Co., declared that the temperatures of the working face depended on whether the fan was working exhausting or under pressure, for that determined in any mine the directness with which the air current reached the working places. Joseph Knapper put the temperature at the face at from 55 to 60 deg. He said that Hanley Colliery, in North Staffordshire, England, the deepest mine in that country, is 4,500 ft. deep and the temperature at the face is 80 deg. Our lower temperatures are the outcome of the shallowness of the seams being worked.

William B. Plank, who has been mining engineer in Alabama for the Bureau of Mines, said that a mine in that state which was driven 2,200 ft. on a 55 deg. pitch in iron ore had a temperature at the face of 97 deg. The humidity being extremely high, the men were able to work only two or three minutes. Mr. Smith said that in Spitzbergen the coal was found to be at a normal temperature of —4 deg., whereas in Illinois it was found to reach 80 deg. in some places. The physiological effect of such temperatures as the latter was increased where the humidities were high or the passage of the air was slow. In such cases the exhaled air seemed to remain around the workman and to cause an extremely unpleasant sticky feeling. E. S. Moore said that temperatures in the metal mines of the West sometimes reached 157 deg.

What Americanization Work Is Being Done

E. E. Bach's paper on "What Has Been Accomplished in Americanization Work in Our Pennsylvania Mining Communities During 1920" was next presented. These are a few of the facts he afforded his hearers:

Of the 140 coal-mining companies operating in Pennsylvania, 135 are engaged in some form of Americaniza-

tion effort, and two of the remainder are contemplating such work. One hundred and twenty-seven of the companies are doing Americanization work through safety and first-aid departments; sixteen through service departments; thirty-seven through employment departments; forty through welfare departments; eleven through social settlements; sixty-four through neighborhood classes for women; twenty-four through educational departments, and eight through personal activities.

Forty companies, he said, have emergency hospitals, employing seventy-four physicians and twenty-five visiting nurses; 123 companies rent houses to their employees and hold themselves responsible for the physical condition of the properties; fifteen sell houses to their employees; four advance money to them for the purchase of houses, lending them from 10 to 25 per cent of the value of the properties purchased, and allowing the purchasers favorable terms of payment; four of the companies operate building and loan associations for the exclusive benefit of their employees; five operate workmen's retirement funds, in addition to the regular workingmen's compensation allowed by law; eighty-two assist in athletics; forty-six have employees' cornet bands or orchestras; eighty-two furnish ground, seed and implements for employees' gardens; twenty-eight furnish and equip community houses, and sixty-six have community playgrounds.

Breast vs. Shortwall Machine for Entry Work

On the second day, with John I. Pratt, state mine inspector, presiding, an interesting discussion took place on

Question 6. What are the merits and demerits of modern coal-cutting machines?

W. L. McCoy said that shortwall machines were ill suited for the driving of headings, as they "hog" or cut into the rib when making their sumping cut on the one side and when dragging out on the other. Some cutters, it is true, do better work with them than others, but the tendency to destroy the integrity of the rib is everywhere apparent. The breast machine is free of this important defect. The shortwall machine also tends to drive out of line. Although the shortwall machine, because of its varied uses, is generally preferred, it must not be forgotten that it has this disadvantage in entry driving.

Thomas Lippeatt, of Indiana, declared himself opposed to the use of the breast machine even in entry driving. True, it does better work, but it is too heavy and it uses too much power. The shortwall machine is much better in tender roof, which quality of the machine is made the more fully available when the sumping cut is made on the road side of the room, where supports cannot readily in any event be placed close to the face. The weight of the breast machine is particularly objectionable where there is tender bottom. In the Indiana field the No. 6 bed is hard to cut. No 4 is easier. Machines can be used in both, but No. 5 is ill suited to undercutters and their use in that bed is attended by actual loss. It is true that thereby solid shooting is avoided and larger coal is obtained, but the 12c. differential is not sufficient to make machines pay.

Mr. Lippeatt could not see that there was any difference in safety between alternating-current machines and direct-current machines, but there is a distinct advantage in using the former where current is bought from public-service corporations, and especially where the number of machines operating is small and no part of the current has to be converted to direct current for use in electric haulage.

Mr. Knapper said that one of the dangers of modern cutting machines was the frequency with which cutting chains would run when the machine was still on the truck. Another danger arose from the jacks being dislodged by the pull on the chain from their hold on the roof. He stated that a man in his district had recently been killed when working between the machine and a jack. The jack was pulled loose from the roof, falling on the man and throwing him onto the bits of the machine.

M. D. Levin said that a clutch was provided for setting the bits in motion. They could not start unless the clutch were thrown. It was necessary to provide that the bits would start on the throwing of the clutch even when the machine was on the truck, for the workman often changed the bits when the machine was in that position and needed to set the chain in motion to make this change.

As for the loosening of the jack, this resulted from carelessness in preparing a place for it, a form of negligence against which no provision could well be made. Another member declared that the breast machine was not satisfactory to the men who had to operate it. Machine men were all of the opinion that in these modern days no man should be required to bar his machine across the face.

Mr. Evans said that when, in the mine, he had asked the foreman if the chain would occasionally start while the machine was on the truck, the foreman replied promptly that this never happened, but a workman declared that a running chain under that condition was not at all unusual. Doubtless the machines are all right as they left the factory both as regards clutches and chain guards, but they would sooner or later get out of order. In fact, he had seen chain guards lying along the entry. He had asked when they had been taken off and was assured that they had been on the machine that very morning, but he believed that inquiry might have shown that they had been removed for many days.

Training of Machinemen Would Save Lives

Machinemen need instructions as to the necessity of taking care of clutches, guards, jacks and other dangerous parts, but he was afraid that too often "green men" were given machines and were allowed to learn by fearsome experiences what dangers surround the handling of cutting machines. Some are killed before they learn what those dangers are.

Mr. Pratt then introduced for discussion:

Question 7. What is the consensus of opinion as to the standardization of all coal-mining equipment?

In discussing this question Mr. Affelder declared that it would be well if every operator standardized his cutting machinery so that he could without difficulty transfer his machines from mine to mine, could reduce his spare parts to a minimum, and cut his repair costs. He said that not only did the Hillman Coal & Coke Co., of which he is general manager, standardize its machines, but also that it had made explosion-proof machinery standard, for though it had mines which were non-gaseous, it thought it best to own no machines of a character that could not be safely transferred to its gaseous operations.

He did not believe that much progress could be made in standardization owing to the diversity of voltages, track gages and seam thicknesses. His company had one mine with 250-volt direct current, another with 550-volt, also direct-current, and one with alternating current. Mr. Hall made some remarks on standardization and the work of the American Mining Congress in this direction.

Booster Has Legitimate Place in Coal Mines

William G. Duncan's paper was not presented, not having been completed in time, owing to sickness in the family. So Thomas Chester then read his excellent paper "Some Data on Mine Fans," which he illustrated by blackboard sketches. In the discussion he declared that the accepted theory in regard to boosters disagreed with actual mine practice and that it was possible to install a force fan that would drive the air half way through the mine and arrange another exhaust fan that would lower the pressure so as to carry the air the rest of the way. The water gage would be at some point practically nil, and from that point onward negative. Fans had been constructed to give 40 in. of static pressure, and with special alloyed steels there is no reason why 100 in. could not be attained.

After lunch, with Mr. Maize presiding, discussion was reopened, the subject being:

Question 8. Should "booster" fans be allowed in coal mines?

Mr. Williams declared that booster fans were often used to circulate air within a closed circuit, drawing stale air from the mine and passing it not toward the surface but back to the inlet of the booster. He knew of one mine where, at the return to the surface, 13,000 cu.ft. of air was being delivered, yet in that same mine was a booster fan busily circulating 33,000 cu.ft. of air. Supposing that fan was receiving all the 13,000 cu.ft. from the surface—we will suppose that the intake and return were equal in volume—the booster was circulating 20,000 cu.ft. of air that had already made at least one circuit of the territory over which the booster fan operated. What likelihood was there that such a current did not contain vitiated air and even an excess of gas?

Risk That Closed Circuit Will Be Formed

Mr. Hall pointed out that if the air returned to a point not greatly distant from the point of intake it might well be drawn in again by the blades of the booster. It was necessary to watch carefully the air currents lest the booster, instead of helping ventilation, actually cut it off, causing the air to move back in a contrary direction to the intake current.

Mr. Williams, taking the floor again, stated that the inside fan, not being under adequate supervision, was apt not to be properly cared for and might stop, allowing the workings it was supposed to protect to fill with gas. Too often, he feared, the fan was put in to make allowance for defective stoppings. The booster fan must depend on the mine circuit and that circuit was too often down and was too undependable for any reliance to be placed on it. D. J. Parker declared that in one explosion the cause was undoubtedly a booster fan. A man was set to watch it, but he failed to do his duty.

E. H. Coxe, general manager of the Snowden Coal Co., remarked that the objection to the use of booster fans in a mine was that if the mine was devastated by an explosion, the booster fan would be put out of operation. George S. Rice had a limited but a good word for booster fans, saying that in the mines of the West, where coal sloped down into high mountains and soon attained an immensely heavy cover, it was impossible to sink shafts to provide efficient ventilation.

With extensive workings and no means of reaching the surface, there were only two solutions: exceptionally high water-gages or booster fans. Conditions might make it difficult to prevent air leakage, in which case booster fans were the only solution, and high water-gages were in any event undesirable and expensive. While engineers in western Pennsylvania might complacently condemn booster fans it might be found in the West that no such attitude could safely be taken.

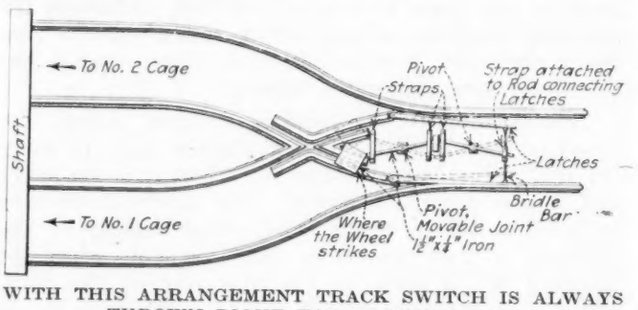
Dr. Reinhardt Thiessen's paper on "New Developments in the Microscopic Study of Coal" followed. After its presentation Dr. Thiessen, on inquiry, declared his belief that the cause of cleat was pressure resulting from the upheaval of mountains. It may well be questioned if pressure causes cleat or merely determines its direction. It is found at right angles to the line of pressure, parallel to the mountain chain. The separation of the coal or slate may result from shrinkage, and the direction of separation may be determined not so much by compression as by the gravity strains resulting from folding. The cleat in shales at any one place, it must be remembered, has often extremely diverse orientation; if it did so vary, our shales would have little self-sustaining quality. It is an interesting problem and perhaps Dr. Thiessen is right in his interpretation. It is an *obiter dictum*, however, and not a matter which has any reference to his pet subject—microscopy.

(To Be Continued in the Next Issue.)

Car-Shunting Device at Foot of Shaft

By Richard Bowen
Pittston, Pa.

An interesting home-made automatic switch-throwing device is in use at the foot of the Baltimore shaft of the Hudson Coal Co., Wilkes-Barre, Pa. This is shown in the accompanying illustration. It consists of two connected pivoted levers, one actuating the switch-



WITH THIS ARRANGEMENT TRACK SWITCH IS ALWAYS THROWN RIGHT FOR INCOMING CAR

point bridle bar, while the other carries a rectangular or diamond-shaped cam that moves from side to side under the action of the car wheels.

The arrangement is so simple as to require little explanation. The cam is supported at such a height as to move over the converging rails as they approach the frog. The straps passing over the levers are D-shaped and serve merely to constrain the motion of these parts. It is self-evident from the drawing that cars will be shunted automatically, first to one and then to the other cage.

Problems of Operating Men

Edited by James T. Beard

Will a Lighted Cigarette Ignite Gas?

The Universal Verdict of Miners Acquainted with Gas Is Against the Taking of Cigarettes Into a Mine Generating Gas, as Manifested by the Host of Letters Received. For the Most Part, the Argument Steps Aside from the Original Question

RESPONDING to the question asked by a Pennsylvania miner as to whether ignition of firedamp can take place from the glowing end of a lighted cigarette, *Coal Age*, Nov. 11, p. 1005, and the invitation of the editor for readers to express their opinions, I am pleased to offer the following as expressing my view:

It seems the miner had listened to an argument between a mine foreman and a fireboss in regard to a lighted cigarette causing an explosion of gas. The foreman claimed that this was possible while the fireboss disagreed with him, saying he believed the gas could not be fired by a glowing cigarette if no flame was present.

As a matter of fact I do not believe that the fireboss would have been willing to put his claim to the test in a mine containing firedamp. Men who have studied the nature of gas and observed its behavior in the mine do not carry cigarettes and matches with them into a gassy mine.

Arguments Based on Opinions

It is true we have been taught that the several inflammable gases found in mines ignite at temperatures ranging from 500 to 1,000 deg. F., while the temperature of the glowing end of a cigarette may not exceed 400 or 500 deg F. At the same time few men would care to take the chances of trying the experiment.

Like my friend, the miner, I have listened to many an argument on this and other matters relating to the mines, but a little questioning has quickly shown that the actual tests have never been made and the arguments are merely based on opinions.

But, putting arguments aside, let me ask, "What is to be gained by raising such a question when practical, responsible mining men all agree that cigarettes, matches or other means of fire have no business in a gassy mine? Would we favor amending our mining laws if it was proved that the fireboss was right and gas cannot be ignited by a cigarette?

In my opinion neither the Mine Inspection Departments of the states nor local mine officials are bothering their heads about such a matter. If gas accumulates in a mine remove it by causing a good air current to sweep the face, but never run a chance with a lighted cigarette.

It is reported that gas was ignited in a mine in Washington by a spark from a pick striking a sulphur ball; but I have yet to hear of such a thing in Colorado. An explosion did occur one Sunday, however, in a mine in the southern part of our state when no one was in the mine. It was claimed then that an accumulation of gas was ignited by sparks caused by a fall of rock on other rock, although I advanced the theory that electric wires caused the ignition of the gas.

Farr, Col. ROBERT A. MARSHALL.

ANOTHER LETTER

HAVING read the inquiry of a miner regarding the possibility of a smoldering cigarette igniting gas in a mine, *Coal Age*, Nov. 11, p. 1005, I feel that there are many men working in our mines who would not fear to smoke in a mine generating gas could they manage to do so without being caught in the act.

For this reason it seems to me proper that the question should be investigated thoroughly by our Bureau of Mines and experiments made to prove or disprove the contention expressed in the reply to this inquiry; namely, that the ignition of firedamp requires a higher temperature and greater intensity than is possible in the smoldering embers of a cigarette.

Belief That a Lighted Cigarette Will Not Ignite Gas

It seems unreasonable for one without a technical knowledge and training to attempt to set up his opinion against that expressed by those who have studied the subject. On the other hand, a statement of this kind must have a tendency to accelerate the near approach to danger due to smoking in mines. With many others, I see grave danger in the idea becoming prevalent that smoking cigarettes in a gassy mine is not dangerous. By experiment I have found it quite easy to ignite a carbide lamp with a lighted cigarette.

Some time ago while firebossing in a gassy mine that was electrically equipped the power suddenly failed and ventilation ceased. I at once ordered all lights extinguished at the face and withdrew the men to the bottom to await the restoration of power. Some of the men fell to smoking and laughed when I remonstrated with them, saying the gas could not reach them where they were.

Danger When Fan Is Started

The danger I foresaw was the possibility of a large increase of gas when the power was again turned on and the fan started. It would have been far wiser for me to have taken them all up the manway and not allowed them to return till the mine had been examined after the power was restored. Fortunately the cessation of power was but of short duration and the men met no trouble on returning to their places.

The suggestion made by "Safety Inspector," Sept. 16, p. 593, in regard to providing steam to take the place of electric power when the latter fails, is a good one and should meet with general approval. It even seems to me that this is a point that should be covered by the mining laws of every state.

Linton, Ind. W. H. LUXTON.

A THIRD LETTER

TO MY mind, the question asked by "Miner" and answered in *Coal Age*, Nov. 11, p. 1005, regarding the firing of a body of gas by a lighted cigarette is too simple a proposition to admit of discussion; and I was surprised that, after answering the question and warning the smoker that "cigarettes, lighted or otherwise, should never be permitted in a gassy mine," the editor asked for the opinions of others on the question submitted.

Certainly, however positive one may be that a lighted cigarette could not or would not set off gas, no man would be foolhardy enough to try the experiment in the mine. I firmly believe that a lighted cigarette in the mouth of a smoker would touch off any accumulated gas with which it might come in contact in the mine.

My thought goes back to the beginning of time when Adam and Eve, driven from the Garden, had to cook their first meal and, perhaps, started their fire by the heat generated by rubbing together two smooth sticks.

The miner today swinging his pick to break the fallen coal draws a spark when the pointed steel glances on a sulphur ball embedded in the coal. As stated by the editor the heat of the spark is sufficient to fire any gas that perchance is present.

The smoker daring enough to smoke in a gassy mine may take the precaution to withdraw to an air-course to light up and return to his place smoking; but will anyone deny that there is always the possibility of the glowing end of the cigarette projecting a tiny blaze under the strong suction or puffing action of the smoker, or generating sufficient heat to ignite gas if present? "Play safe" is my motto.

JAMES A. HENNIGAN.

Pittston, Pa.

A FOURTH LETTER

THE question raised by a miner from Mt. Carmel, Pa., in regard to a lighted cigarette setting off gas, reminds me of an amusing incident in my own career when mining coal in Great Britain. In that country, men are fined and discharged from the colliery if cigarettes, pipes or matches are found in their possession while in the mine.

But before narrating the incident I want to say that it pays to play safe. I would rather believe that the glowing end of a cirgarette, or a smoldering pipe would ignite gas and feel safe in that belief, than to rest my faith in the theory that ignition of gas from such a source is impossible, however well the fact may seem to be demonstrated. No investigation made by the Bureau of Mines or any other authority could induce me to walk into a body of gas with a lighted cigarette or pipe in my mouth.

CIGARETTES OR PIPES DANGEROUS AS NAKED LIGHTS

Referring to the dispute between the foreman and the fireboss mentioned in this inquiry, my inclination is to side with the foreman in his contention that a lighted cigarette *will* ignite gas. It is my belief that we should look upon a lighted cigarette or pipe as we would upon a naked light. Many a serious fire or explosion of gas has been caused by lighting a cigarette or pipe and throwing the match down among some combustible material, if, perchance, the flame of the match failed to ignite the gas present.

Let it not be thought that I am speaking now because of a prejudice against the use of tobacco. No one is more fond of the weed than I am myself. The idea I wish to convey is that pipes, cigarettes, matches and other means of fire are no more safe in a gassy mine than frozen dynamite placed in a stove oven to thaw. For my part, I cannot conceive of a man wanting to smoke while engaged in the work of removing gas, though I confess men will often do strange things that are hard to understand.

But my interest in this question has almost made me forget the incident I started to narrate, which is as follows: On my way home from the mine one night, I purchased a package of cigarettes and, lighting one, put the remainder in my vest pocket. The following morning, my fellow boarder put on my vest by mistake in place of his own. Arriving at the mine he found the men lined up to be searched for matches and tobacco, which was the custom about twice a week.

Not being a smoker himself and having no suspicion that he wore another man's vest, my friend submitted cheerfully to being searched. It can well be imagined what his feelings were when the cirgarettes were drawn from his pocket, as he was a most careful and law-abiding citizen and miner. It was with much difficulty that a satisfactory explanation was made regarding the matter.

COAL SEAM BURNS FORTY YEARS

Another incident, hardly less amusing, occurred when a fire that was consuming a seam of coal on the east side of this valley, near Wilkes-Barre, Pa., broke out on the surface. For more than forty years the fire had been in progress in an old abandoned mine and, although the mine and all openings thereto had been carefully sealed, the fire continued to eat its way through and make its appearance at different times and places on the surface.

About six months ago a fireboss discovered that the fire had broken through into the live workings of the mine where he was employed. He reported the fact at once to the superintendent, who is an old experienced miner. A little later the fire broke through to the surface and the superintendent with several firebosses and others went to the place to see what could be done in the way of closing the break and smothering the fire.

So accustomed had this old-time miner been to excluding all naked lights and fire when removing gas in mines and handling fires on the inside, that he quite forgot himself for the moment and would allow no one to smoke around the place there on the surface, notwithstanding the fact that the flames were even then leaping three or four feet into the air.

Plains, Pa. RICHARD BOWEN.

A FIFTH LETTER

THE question of whether a lighted cigarette will set off gas in a mine is to me a foolish one. It reminds me of a child striking a percussion cap to hear it pop and being badly hurt by the explosion. It often happens that our curiosity overrides our better judgment and we are tempted to put such a question as this to the practical test with probably fatal results.

The curiosity of mine officials or their ignorance, it little matters which, has frequently caused the loss of many lives. Numerous mine disasters can be traced to the foolish acts of officials, and it would not be strange to me if it transpired that the fireboss mentioned in this inquiry had never witnessed a great mine disaster. Had he known its terrors, he would not have debated this question with his foreman, but have given himself to devising ways and means of eliminating explosions, instead of seeking to ascertain to what extent one could take chances.

While it may be true that, under certain conditions, gas may not ignite, why should any one desire to take the chance. It is well known that gas is highly inflammable and capable of great destruction. Our leading mining text books draw attention to the fact that a firedamp mixture is made more easily ignitible when coal dust or olefiant gas are present, and its explosive force is greatly increased.

Again, when gas issues fresh from a feeder and is not diluted with air it is what the miners call "sharp." In that condition, the gas agitates the lamp flame and obstructs the formation of a cap, which is always difficult to observe when the gas is sharp. These variations in the condition of gas in mines render the possibility of its ignition quite uncertain and make it more than ever important to take no chances.

Mention has been made regarding the possible ignition of gas by a spark. In this connection, many will recall the Bellevue mine disaster, in Canada (Dec. 9, 1910), and remember that the conclusion of the commission that investigated the cause of the explosion was that the ignition was due to sparks caused by a heavy fall of rock striking other rock. The correctness of this conclusion was fully demonstrated when it was shown that rock of that particular character would strike sparks in falling.

My opinion is that we should take all possible care and use every precaution in maintaining a wide margin of safety when dealing with gas in the mine.

New Castle, Col. V. FRODSHAM.

[These and other letters have stepped aside from discussing the question asked, and devoted themselves to expanding on the generally acknowledged danger of smoking or carrying matches into a mine generating gas. As we have previously stated, "Cigarettes, lighted or otherwise, should never be permitted in a gassy mine," Nov. 11, p. 1005. Except under peculiarly favoring conditions, it may be impossible to ignite pure methane mixed with air by the glow of a cigarette and yet smoking in gas is dangerous.

WHY THE QUESTION IS IMPORTANT

One writer, however, probably puts into words the thought that fills the minds of many others; namely, Why ask such a question if it is not to be answered with the assurance that ignition of firedamp by the glowing end of a cigarette is not only possible but probable if the gas is present?

The answer to this suggestion is: Accurate knowledge of how ignition of firedamp mixtures may take place is necessary to the correct determination of a disaster of that nature. It may be possible by a vigorous puffing to increase the temperature of the glowing end of a cigarette perhaps several hundred degrees and possibly (?) cause it to inflame.

One writer states he found no difficulty in igniting a carbide (acetylene) lamp with a lighted cigarette.* The temperature of ignition of acetylene gas is 900 deg. F., while that of pure methane is 1,200 deg. F., but the volume and intensity of the igniting flame are important factors in the latter instance.

We hope that the Bureau of Mines will investigate the question by performing the necessary experiments to determine the facts. We have often tried to ignite the illuminating gas flowing from an open jet after the match has gone out leaving only the glowing end but no flame. Although the charred match glowed more and more brightly in the gas, ignition failed in every case.—Editor.]

*The Dewar Mfg. Co., Lamps, 34 Thirty-fifth St., Brooklyn, N. Y., are authority for the statement that the carbide lamp can be ignited with a cigarette only after clearing the lighted end well and drawing hard on the cigarette for about 45 seconds.

Tact vs. Discipline

The use of tact in dealing with miners is always commendable but, as with everything else, there are exceptions to the general rule and the use of tact cannot be recommended when it means the sacrifice of discipline.

EXPLAINING his previous statement advocating the use of drillings for tamping a charge of dynamite, Benjamin Deeble states, *Coal Age*, Oct. 28, p. 905, that he referred then to blasting rock only, which he says is implied by the use of dynamite.

Admitting that to be the case, still it is never safe to tamp a hole with gritty material. If the rock drillings are fine they may serve well for the purpose but if gritty there is danger of injuring the fuse when tamping the hole. At least 2 in. of clay or other plastic material must first be inserted on top of a dynamite charge for its protection.

In the same letter Mr. Deeble cites an instance where a fireboss used tact in dealing with a miner who had failed to set a post under a rock that he (the fireboss) had marked as unsafe when making his rounds. Returning to the place later he found the man engaged in loading his coal and the post not set as the fellow had been notified to do before proceeding with other work.

Allowing that the fireboss, in this instance, gained his point by his tactful remonstrance with the man for not having followed his instructions, let us consider for a moment what might have resulted by the man's failure to obey the orders given him. Suppose that the fireboss, on returning to the place, had found the man beneath tons of fallen slate. Does not such a possibility urge the use of discipline in every case of willful disobedience of instructions. There are times when tact should be used but never at the sacrifice of discipline.

An instance comes to my mind regarding a foreigner who was blessed with a jawbreaking name spelled in twenty-seven letters. For convenience, the superintendent gave him the name of "Mickey." One day the superintendent was inspecting the mine with the foreman. On coming to Mickey's place, they found that the poor fellow had neglected to set a post as instructed. I can see that foreman now as he grabbed a post and made a rush for poor Mickey. The fellow was terrorized and it is needless to say he never again forgot to set his post.

In the same district and about the same time, this foreman found a foreign miner who had broken the glass of his safety lamp and was still at work. It was not a time then to use tact and, blowing out the light, the foreman fairly drove the miner from the mine. It is quite probable that fellow was equally impressed with the seriousness of his neglect as was poor Mickey.

The long list of "don'ts" given at the close of Mr. Deeble's letter, though good as far as it goes, would be more complete if continued. However, I have more faith in emphasizing things that should be done, yes, *must* be done, than in telling a man what he must not do. I believe in the practical lessons taught by moving picture lectures showing the right and the wrong way of working in the mine. The miner's family, including his wife and children, see and talk about those things at home, which has its effect in a wonderful way.

McKeesport, Pa. ANDREW O. BAIN.

Inquiries Of General Interest

Heating Value of Coal Calculated

An assumed relation between the fixed carbon and the volatile matter in coal is suggested as a basis for computing the heating value of the coal.

WILL *Coal Age* kindly show by an actual example, the methods of determining the heating value (B.t.u.) of a coal giving the following analysis: Moisture, 1.50 per cent; fixed carbon, 59.50 per cent; volatile matter, 34.37 per cent; ash, 4.63 per cent; sulphur, 1.45 per cent? MINE FOREMAN.

———, Ala.

This being a proximate analysis, it is necessary to employ the method suggested by William Kent, which assumes that there is a fairly fixed relation existing between the fixed carbon and the volatile matter contained in coal having more than 60 per cent of fixed carbon. Applied to this class of coal, the method suggested gives results within 2 per cent of the actual heating value of the coal as determined by the calorimeter.

Coals having less than 60 per cent of fixed carbon are liable to exhibit an error of 4 per cent when the heating value is calculated by this method. The reason for this is that coals low in fixed carbon and high in volatile matter usually show a considerable variation in the percentage of oxygen in the volatile matter and the method is therefore less accurate as applied to such coals.

The first step in the calculation is to find the percentage of fixed carbon per pound of combustible. By the analysis given, the total percentage of combustible matter in the coal is 59.50 + 34.37 = 93.87 per cent, and the percentage of fixed carbon per pound of combustible is, therefore, (59.50 × 100 ÷ 93.87 = 63.38 per cent. The percentage of fixed carbon being greater than 60 per cent classes this coal as one to which the Kent method can be applied with an error less than 2 per cent in calculating its heating value.

Referring to the following table giving the heating value of coal per pound of combustible (Kent, 8th edition, p. 791), the heating value of a coal containing 63 per cent of fixed carbon is 15,120 B.t.u. For 68 per cent of fixed carbon, the heating value is 15,480 B.t.u. By interpolation, the heating value corresponding to 63.38 per cent of fixed carbon is found to be 15,147 B.t.u.

APPROXIMATE HEATING VALUES OF COAL

Per Cent of Fixed Carbon in Coal Ash-and-Moisture Free	Heating Value (B.t.u.) per Pound of Combustible
100	14,580
97	14,940
94	15,210
90	15,480
87	15,660
80	15,840
72	15,660
68	15,480
63	15,120
60	14,760
57	14,220
55	13,860
53	13,320
51	12,420

Finally, the total combustible matter in this coal being 93.87 per cent, the heating value per pound of coal, is 15,147 × 0.9387 = 14,218 B.t.u.

Oxygen in Air Replenished

The oxygen content of the atmosphere is everywhere practically uniform, that element being continually replenished as rapidly as it is consumed.

WHY is it that the proportion of oxygen in the air surrounding the earth remains constant when we know that there is such large quantities of this gas consumed in various ways, through the burning of carbonaceous matter and the oxidation of different materials? We are taught that all forms of combustion taking place in the air are accomplished with a correspond-

ing loss of oxygen, which is converted into carbon dioxide. How then is this loss of oxygen compensated; or do we understand that the amount of oxygen in the Universe is gradually becoming less and less with the advance of time?

New Kensington, Pa. STUDENT.

Innumerable tests have demonstrated the fact that the composition of free air is practically uniform at all points on the surface of the earth and to a considerable height above the surface. Taking the nebulous hypothesis of the formation of the earth as correct, the solid crust of the earth at one time existed as a gaseous medium of ever increasing density; and it is estimated that nearly 50 per cent of the weight of this crust is oxygen, while 23 per cent of the weight of the remaining atmosphere is the same element.

It is not known in how many ways, through manifold natural agencies, the oxygen contained in the earth's crust is finding its way back into the atmosphere. Science has discovered, however, that while large quantities of oxygen are being continually consumed, Nature has made ample provision for replenishing the supply. One of these avenues is through the agency of plant life. In the growth of plants there is a continuous cycle, which is briefly described as follows:

All vegetation absorbs carbon dioxide from the atmosphere. Moisture is absorbed both from the air and from the ground. In the growth of the plant, the carbon of the carbon dioxide and the hydrogen of the water unite to form carbohydrates and the oxygen is set free and passes into the atmosphere.

The atmosphere surrounding the earth is one great aërial sea, which is being constantly agitated and uniformly mixed by the agency of winds and currents that are maintained through convection due to the ever-varying temperature of the air. These agencies are sufficient to explain the uniformity of composition of the atmosphere surrounding the earth.

Examination Questions Answered

Examination for Mine Foremen, Eleventh Anthracite District

(Selected Questions)

QUESTION—*Name and describe some of the important differences between the Davy, the Clanny and the Wolf safety lamps.*

ANSWER—In the Davy lamp the oil vessel is surmounted by a gauze chimney 1½ in. in diameter and from 4 to 6 in. in height, the top of the chimney being protected by a gauze cap that fits over the top of the main gauze. In the Clanny lamp, the flame is surrounded by a glass cylinder 2¼ in. in diameter and the same height, which is surmounted by a conical gauze chimney 4 in. in height and protected at the top with a gauze cap like the Davy.

The air enters the Davy lamp through the lower portion of the gauze at a point on a level with the flame of the lamp, which makes the circulation within the chimney wholly ascensional. In the Clanny lamp the air enters the lamp just above the glass chimney and must descend to the flame, which causes two conflicting currents in the combustion chamber within the glass cylinder and gives this lamp a tendency to smoke.

The Wolf lamp, like the Clanny has a glass cylinder surrounding the flame and surmounted by a conical gauze, which is generally protected by a steel bonnet of a particular design, being corrugated and having tangential openings for the escape of the burned air and gases. In this lamp, the air enters the combustion chamber at a point below the flame, through gauze-protected openings, which makes the circulation wholly ascensional and improves the illuminating power of the lamp. The Wolf lamp burns benzine or benzine naphtha, which is highly volatile and gives a brighter flame, besides being more sensitive to gas. On this account, the lamp is easily extinguished in gas and is equipped with an igniter for the purpose of relighting the wick at such times. Owing to the extreme volatile nature of the oil burned, the Wolf lamp gives a fuel cap that is often mistaken for a gas cap when no gas is present. For the same percentage of gas in the air, the Wolf lamp gives higher flame caps than lamps burning sperm or cottonseed oil. The oil vessel of this lamp is of solid pressed steel and filled with cotton to absorb the volatile oil and make it less explosive.

QUESTION—*What dangers may arise from the improper assembling of a safety lamp?*

ANSWER—When a lamp is improperly assembled, the parts do not fit tightly together, which permits the gas-charged air burning within the lamp to pass the flame to the outside air and renders the lamp unsafe for work in gas. A lamp is improperly assembled when any part is omitted or when each part has not been carefully examined to see that it is in perfect condition and clean.

QUESTION — *A slope measures 4.6 in. in length on the mine map; the tidal elevation at the top is + 780 ft, and at the bottom + 530 ft.; what is the length and grade of the slope?*

ANSWER—The Anthracite Mine Law (Art. 3, Sec. 1) requires the mine map to be drawn to a scale of 100 ft. to the inch. Assuming this has been done, a measurement of 4.6 in. on the map corresponds to a horizontal distance, in the mine, of $4.6 \times 100 = 460$ ft. The vertical height of the top of the slope above the bottom is $780 - 530 = 250$ ft. The length of the slope is $\sqrt{460^2 + 250^2} = 523.5$ ft.

The slope has an inclination of 28° 31½′. For example, calling the angle of inclination of the slope a, we have $\tan a = 250 \div 460 = 0.5435$; and the angle corresponding to this natural tangent is 28° 31½′.

The grade of the slope may be given as a rise of 250 ft. in 460 ft. horizontal distance, or a rise of $250 \div 4.6 = 54.35$ ft. per hundred feet horizontal distance; or $250 \div 5.235 = 47\frac{3}{4}$ ft. per hundred feet pitch distance. The former corresponds to a grade of 54.35 per cent of horizontal distance and the latter to 47.75 per cent of pitch distance.

QUESTION—*What precautions would you suggest to guard the employees in a mine from possible accidents due to the use of electricity?*

ANSWER—All electrical installations in and around a mine should be made by a competent mine electrician who is thoroughly familiar with underground conditions. All conductors will then be properly secured to the mine timbers or otherwise supported in a safe manner in the rib or roof of the entry.

Conductors must be carried on the opposite side of any entry used as a travelingway by the men; but, as far as practicable, all live wires must be kept off of travelingways and roads that men are obliged to use in going to and from their work. Wherever men are obliged to cross a trolley road, or come near to live wires, the wires must be thoroughly protected so as to prevent accidental contact of men or animals.

At all points, live wires must be properly insulated to prevent the accidental grounding of the current. It is necessary to use extra precaution in the timbering of all roads and passageways where electric wires are installed, in order to avoid the dangers due to a fall of roof tearing down the wires.

In addition to the precautions relating to the installation of electric wires in a mine, all emp'oyees should be instructed to observe the danger signals that must be posted at all points where men must work or come near to live wires. Workmen must be warned not to carry their tools or other supplies on their shoulders when in the mine. Strict rules and regulations must be made and enforced by suitable penalties to prevent any tampering with electric wires or other appliances. Electricity should not be installed in mines generating gas. Where the coal is mined by machines, extra care must be used to prevent the grounding of parts of the machine that might cause accident to the men in charge. The fine cuttings (bug dust) produced by the machine should be loaded out and not left to accumulate at the face.

May Move Tenters to Healthful Quarters

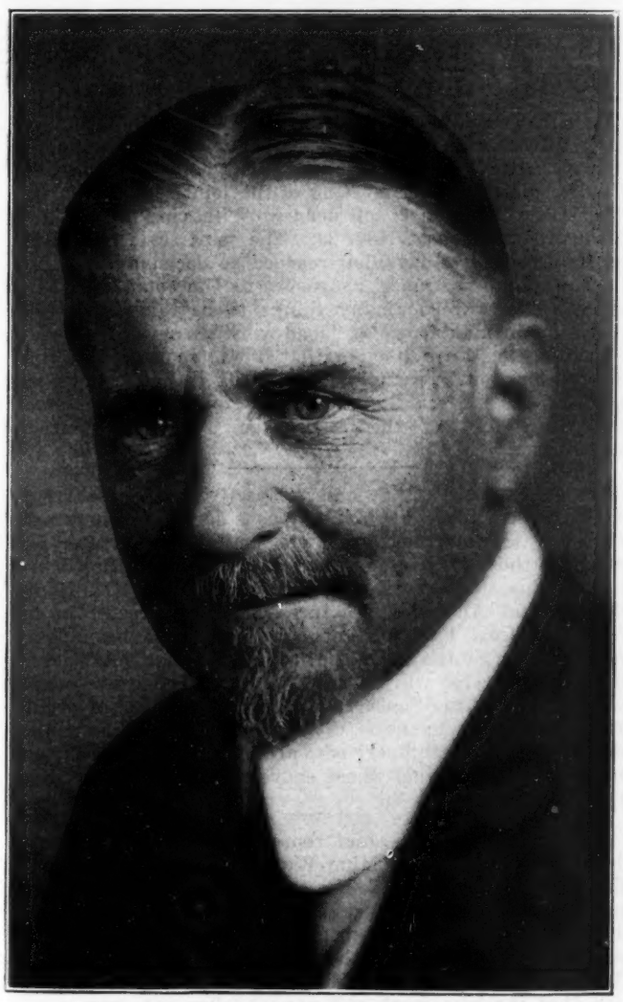
FEARING that an epidemic might break out in the tent colonies of the striking coal mine workers in Mingo County, West Virginia, Governor Cornwell on Dec. 11 instructed the State Health Department to send experts to investigate health conditions. It has been suggested that the tenters should be moved to Williamson or some other town in Mingo County, where they could be made more comfortable and their condition improved from a sanitary standpoint. It is understood that evictions are proposed on the Kentucky side of Tug River, and that the union proposes to place the families thus displaced in the West Virginia tent settlements, thus adding to the congestion and increasing the danger of a spread of disease. Disputes have arisen between the mine unions and the operators over the possession of the land occupied by the Burnwell tent colony in West Virginia. The military believe this matter one of civil interest and will take no action in the matter.

National Coal Association Economist

BECAUSE of the attention expected to be given the coal industry at the present session of Congress, particular importance attaches to the position of economist for the National Coal Association. This work just has been taken over by Allen H. Willett, for many years instructor in the Carnegie Institute of Technology, Pittsburgh.

After his graduation from Brown University he became an instructor in economics there, a position he held from 1901 to 1905. In the latter year, on the opening of the Carnegie Institute of Technology, he accepted an invitation to take charge of the department of economics in that institution. In 1908 he organized the department of commercial engineering at the Carnegie Institute, which he directed until 1917, when he left to take up war work. He served for a time as assistant food administrator for Allegheny County, Pennsylvania.

In 1918 Mr. Willett went to Washington at the request of the War Labor Board to make the investigation of wages and hours of labor. The result of this work is discussed in a preliminary report which was published by the Department of Labor as its bulletin No. 265. The investigation was cut short by failure of the last Congress to provide an appropriation for its continuance. As a result several of the reports which had been prepared still are awaiting publication.



ALLEN H. WILLETT
Head of Bureau of Economics, National Coal Association.

Anthracite Production, April to November

PRODUCTION of anthracite in recent years is summarized in a table issued by the Geological Survey, printed below. The figures for 1919 are revised for the last time to agree with the results of the Survey's mine canvass for that year. The error in the original estimates was found to be 2 per cent. The figures for 1920 also are revised on the basis of statistics of monthly shipments received from the Anthracite Bureau of Information.

It will be seen that up to Sept. 1, when the anthracite strike began, the present coal year was ahead of all the preceding six years except 1917 and 1918, which hold the record. The loss of tonnage on account of the strike and the succession of holidays which marked November have brought it about that the cumulative production up to Nov. 30 (59,633,000 net tons) was less than that in any of the years shown except 1916. Compared with 1919 the present year shows a decrease of 2,259,000 net tons.

COMPARATIVE PRODUCTION OF ANTHRACITE, FIRST FIVE AND EIGHT MONTHS OF COAL YEAR *
(In Net Tons)

Coal Year Beginning:	Production to Aug. 31	Production to Nov. 30
April 1, 1913	38,150,000	61,604,000
April 1, 1914	39,017,000	64,026,000
April 1, 1915	37,541,000	62,239,000
April 1, 1916	34,678,000	57,304,000
April 1, 1917	43,000,000	68,866,000
April 1, 1918	44,338,000	67,284,000
April 1, 1919	37,883,000	61,892,000
April 1, 1920	39,212,000	59,633,000

* Includes mine fuel and sales to local trade.

Such data as are available to the Geological Survey indicate that the distribution of the tonnage produced has not departed greatly from normal, as established by past experience. Receipts at Duluth-Superior to the end of November were 1,594,000 net tons as against 1,730,000 for the season of 1919. Similarly, shipments to Canada for the first seven months of the coal year are reported as 3,023,000 net tons, about the same proportion of the total output as has been sent to Canada in other years.

COMPARATIVE IMPORTS OF PENNSYLVANIA ANTHRACITE INTO CANADA, FIRST SEVEN MONTHS OF COAL YEAR
(Net tons, all sizes)

Coal year beginning:	Imports into Canada to Oct. 31	Per Cent of Pennsylvania Production
April 1, 1914	3,158,000	5.6
April 1, 1915	2,696,000	5.0
April 1, 1916	2,843,000	5.7
April 1, 1917	3,546,000	5.9
April 1, 1918	3,063,000	5.1
April 1, 1919	3,238,000	6.0
April 1, 1920	3,023,000	5.8

WHEN, ON DEC. 9, eighteen men employed in the Barnum Colliery, Pittston, Pa., refused to join the "new" or insurgent union, a button strike took place. These eighteen were members of the United Mine Workers of America. This button strike violated a provision of the agreement with the Pennsylvania Coal Co. to the effect that no colliery should go on strike unless the general grievance committee, which consists of seven men from each of the collieries, has taken up the matter. Mr. Joyce, who is the accepted mediator for the insurgents, managed to get the men back to work.

Would Prohibit Coal Exports Until Home Needs Have Been Satisfied

A BILL which has been introduced in the House of Representatives by Representative McLane, of Pennsylvania, would, if passed, forbid the sale of coal for export until the needs of American householders have been cared for. In addition, the bill empowers the Interstate Commerce Commission to fix the price of coal and to establish rules for regulating the production, sale, shipment, distribution, apportionment and storage of coal.

It is a foregone conclusion that the bill could not be passed and will not receive serious consideration by the Committee on Interstate and Foreign Commerce, to which it was referred.

Representative McLane is a native of Ireland. He was elected to Congress from the Scranton district. In his autobiography he describes himself as a locomotive engineer by occupation and states that he worked in the coal mines of Scranton for ten years.

Loomis Says Lehigh Valley Conformed to Ruling in Lackawanna Case

REFERRING to the decision of the Supreme Court ordering segregation of the coal from the rail properties of the Lehigh Valley Railroad Co., E. E. Loomis, president of the company, declared Dec. 8 that the Lehigh Valley's house is in order.

He stated that when in February, 1917, he went to the Lehigh Valley from the Lackawanna Railroad Co. he had fresh in mind the provisions outlined by the Supreme Court in the Lackawanna case. He said he put those provisions into effect in the Lehigh Valley's management, and since that time has conformed strictly to those rulings in the management of the Lehigh Valley's coal and rail properties.

Mr. Loomis recalled the fact that the suit was instituted six years ago by the government and that in the time that it has been dragging through the courts radical changes have taken place in business. He said that attorneys had not been able to bring those facts to the attention of the court because of the fact that they are developments which have taken place subsequent to the filing of the suit.

Officials of the Lehigh Valley say that they have as yet no plan for getting its coal properties to its stockholders. Indebtedness of those companies, stock and bonds of which are owned by the Lehigh Valley, are comparatively small, amounting altogether to approximately $24,000,000 of stocks and bonds. Mr. Loomis estimated that coal ore in the properties owned by the coal subsidiaries was between 800,000 and 1,000,000 tons. Most of those properties were acquired by the railroad prior to 1875, and its officials say that every one of them was owned by the company prior to the enactment of the Sherman Act.

Loss in Mingo County Five Million Dollars

IT IS estimated by officials of the Williamson Operators Association that the total loss in production in the Williamson field between July 1 and Dec. 1 was 1,020,000 tons. Estimating the selling price per ton of coal in the period mentioned as $5 per ton, which is considered a conservative figure, the loss in production is valued at $5,100,000.

As showing the heavy losses sustained by the miners during the duration of the strike, only 139 men out of a possible 5,000 were working the greater part of July, but on Dec. 3, in the whole Williamson field 4,700 men were at work. It is estimated that the average day's labor would net a miner $6, and on that basis the loss to the miners involved in the strike during July alone was well over a million dollars. Although miners have been returning to work from time to time it is estimated that the total loss during the duration of the strike has been in the neighborhood of $3,000,000. Miners assert that there are still 2,700 men on strike, but that is disputed by the operators. If the number as given by the miners is correct it means a daily loss in wages at the present time of $16,000. It is asserted by the mine workers that the sum of $32,000 a week is being expended for the maintenance of the miners.

Production figures given by the Williamson Operators Association show a total production in the strike zone of 135,000 tons for November, or an increase of nearly 25,000 tons over October. It also is stated that nearly 1,800 men are now at work, that being an increase of 374 over October.

On Dec. 1 all but eight of the forty-eight mines closed down were in operation and between Dec. 1 and Dec. 10 additional mines resumed work.

Erie Mine Workers Still Talk Strike

TROUBLE continues at the Pennsylvania Coal Co.'s mines. The men demanded at one time that three company superintendents be dismissed or they would strike. It was later announced that Superintendent Weichel of No. 14 colliery had been given an indefinite "leave of absence" by the management of the company. At a meeting held Dec. 2 the men decided not to strike owing to the removal of Mr. Weichel and because the charges against Thomas Brown and William Johnson, the other superintendents, were not sustained. But they then demanded the discharge of General Superintendent William P. Jennings, alleging that he had interfered in union affairs. The company management has undertaken to discharge any of its superintendents if it can be proved that they have been intimidating laborers and discriminating against union men.

Five subcontractors who were discharged when the strike ended are alleged to have been given places in the mine where large wages could be made. Feeling is strong at the Butler Colliery against sixteen "hustlers" who under the subcontract system used to speed up production. These men are now alleged to be hindering the miners in producing coal.

Dead Work Still Rises to Trouble Scale Makers in Northern West Virginia

OPERATORS and miners of northern West Virginia are still at work on a "dead-work" scale embracing the mine territory in twelve and a half counties in northern West Virginia, another meeting of the joint scale committee of operators and miners on "dead work" having been held at Fairmont on Monday, Nov. 29. The joint scale committee was in session two days, but reached no decision even after the sub-committee made its report to the committee as a whole. There are so many things to be taken into consideration in making up a "dead-work" scale with a view to preventing future disputes that it will require some time yet to work out a complete scale. It is not believed in fact that such a scale will be ready for submission much before the first of the year, even if it can even be settled then.

COAL SHIPPERS, PRESENT and prospective, through the port of Charleston, S. C., are actively considering the organization of a tidewater coal exchange similar in character and extent to those now in operation at the ports of Baltimore, Philadelphia, New York and Hampton Roads. Dr. Henry M. Payne of Andrade-Eyre Inc., who is a director in the Tidewater Coal Exchange of New York, has been asked to assist in organizing the Charleston exchange. A meeting of those interested will be called at an early date to confer with officials of the Southern Ry. for the purpose of organizing this new exchange at Charleston. All coal companies, operators, or transshippers who are interested are requested to advise H. M. Payne, whose address is 80 Broadway, New York City, at once.

CHARLES H. BATLEY, chief representative of the international union of United Mine Workers of America in subdistrict No. 4, district 17, has issued a notice to the union men in the northern West Virginia field condemning the closing down of mines by abstention from work for funerals and assuring them that if the practice continues the penalty clause will be put in effect. He suggests in this communication that the men work and pay a dollar per man to the bereaved family.

Cushing Charges Unfair Treatment of Coal Industry by Calder Committee

COMMENTING on the report of the Calder Committee on Reconstruction submitted to the U. S. Senate Tuesday, Dec. 14, George H. Cushing, managing director of the American Wholesale Coal Association, wrote the following letter, dated Dec. 14, to Senator Calder:

"May I, without offense, take some slight exceptions to your report just filed with the Senate. I do so because I fear that you have been led to believe that the building industry was surrounded by difficulties which by some process coal avoided. This impression, if it exists, should be corrected.

"Before going into that matter, however, I want to digress long enough to assure you that I am not to be listed among the severe critics of your committee. That is, you told me that Mr. Miller was directing your investigations. When not working with you he is the editor of a newspaper devoted to the building industry. I see nothing wrong in your seeking his help nor in his serving your committee. If I allowed myself any feeling on the subject it would be one of regret that you had not employed an editor of a coal-trade paper to conduct the coal investigation. He might have written a more sympathetic report. However, I am not on that score a critic of the work of your committee.

Testified in Favor of Equal Treatment

"Especially I am furthest from criticizing your committee because it said that the Interstate Commerce Commission should regulate transportation and not industry. Indeed, when the building-material people went before the commission on July 8 and 9 to plead for equal treatment with coal in the matter of car supply, I gave testimony in their behalf. I said that the coal trade could produce the needed coal even if the building-material people were allowed to have cars in their proper season.

"Where I feel that your report falls short of doing simple justice to coal is in the following particulars:

"(1) The dislocations in business have been general and worldwide. They have not been confined to the housing program of the United States. The same difficulties which the building industry faced have encompassed the coal trade. A little more emphasis upon this fact and a little less of sweeping condemnation of the coal trade might have made your report more fair.

"(2) We all have, of recent years, been insisting upon a new and rather high standard of business morality, this being insisted upon especially during the war, but of late there has been, due to superior temptations, a general and lamentable lapse from even ordinary business morality. A little more emphasis upon that important fact—recognition, perhaps, that our public standards had outrun the capacity and practice of private individuals and recognition that this hiatus was not peculiar to coal—would have made your report seem somewhat more fair to coal.

Unusual Practices Condemned as Universal

" (3) The practices about which you complain were in no sense general within the coal trade. However, your condemnations are sweeping. They are not modified by any statement which would indicate that there is possible any discrimination between the coal trade as a whole and the worst offenders in it. On the contrary, when your report speaks of the vicious practices in the building trade it carefully localizes that immorality. If the same care had been taken to localize the bad practices in the coal trade, the effect would have been, it seems to me, to give your report a tone of greater fairness.

" (4) The facts are that the coal trade practices of which you complain amounted merely to a market explosion. This was the direct result of many things but principally it sprang from the removal of restrictions which had been extremely severe. And this explosion operated only through six months. This is a far shorter period than is covered by the charging of high prices in any other industry. Also, the fact is that the coal industry, through a long and eventful history, has never been guilty of any similar offense. On the contrary, it has been underpaid through 113 years rather than overpaid. I see no sympathetic note in your report on this account. I see no recognition of the great part coal has played in building up this country's industry. I see no recognition of its ready compliance with governmental demands whenever and wherever expressed. I see no recognition in your report of the repeated and strenuous efforts of the coal trade during last summer to police its own actions. Instead, I read only your unqualified censure. I think this breathes a spirit which might, if I may be allowed to suggest it, be more fair.

" (5) The facts are that the coal trade was striving to satisfy the home demand for coal and at the same time to build up an export trade that our foreign commerce might have a foundation of coal upon which to invite other business. This attempt to add a new department to our normal trade in coal naturally brought about a temporary dislocation in our domestic business. I believe your report could, without damage to its purpose, have recognized this fact.

" (6) In your recommendations—which in the main are excellent—you propose that sort of a study of the coal trade which has a tendency to put it perpetually under suspicion. At the same time you propose a bureau to encourage—and not criticize—the building trade. I personally believe that your report would have had a tone of greater fairness if these contrasting recommendations had been omitted.

"While I believe that these features of your partial report are unfortunate, I do not want it understood that I am in any sense hostile to what you are trying to do. I am writing this in the hope that when you make your full and final report the unfortunate impression left by this partial report may be removed. In the meanwhile, if there is anything that I or the members of this association can do to give you, in any reasonable detail, the facts about coal, please feel free to call upon me or them."

Government Regulation of Coal an Economic Mistake, Says Congressman Sanders

WHEN the Mayor of Brockton, Mass., wrote Representative Sanders, of Indiana, urging a law to fix the price of coal and to regulate its sale, the Indiana Congressman countered with a statement to the effect that, although Massachusetts shoes have increased more than 100 per cent in price in his state, he is not advocating government regulation of the price of shoes. Price regulation, he says, "is a short-sighted policy—a sad economic mistake." Representative Sanders' letter, in part, is as follows:

During the war the price of coal was fixed by a fuel administration created by the President to take over the price fixing and regulating functions under the Lever Act. The proposal to revive the price-fixing policy in regard to coal is the first serious proposal to carry our war powers and our war policies on into the period of peace.

I think there is considerable doubt as to the constitutional power of Congress in times of peace to fix the price of coal. While war powers do not necessarily end with the war, yet the power used must bear some reasonable relation to war. A general price-fixing law relating to coal is not a regulation of commerce within the meaning of the commerce clause of the constitution. . . .

Your shoe dealers and shoe manufacturers have shoes, more than they need personally. The people in the coal-producing regions have more coal than they need personally. Now it is proposed not to permit them to trade on an equality, one pair of shoes for one ton of coal, if the prevailing prices are equal—neither is it proposed to let a governmental body fix the terms upon which the trade shall be made—that is, to fix the price of the pair of shoes and the price of coal. But it is proposed to determine the value of the coal by an arbitrary method and then when the price is lowered to make the coal regions furnish

Advocate of Government Ownership of Coal Mines Asks Survey

A SURVEY of coal mines to ascertain their value, including their machinery and equipment, looking to government ownership, is proposed by Representative Lampert, of Wisconsin, in a resolution introduced in the House. Mr. Lampert proposes that the Federal Trade Commission shall conduct this survey and seeks an appropriation of $50,000 therefor.

The resolution reads:

Whereas it appears that the present high price of coal is due to monopolistic control, and that labor troubles, shortage of cars, and high prices have seriously impaired the lives and health of our citizens; and

Whereas a commodity so vitally important to the welfare of the people should not be the subject of monopoly; and

Whereas an adequate supply and equitable distribution can only be secured by Government ownership; therefore be it

Resolved, that the Federal Trade Commission is hereby directed to make a survey of all coal-bearing lands in the United States and its possessions, to ascertain the present value of all coal lands and coal mines, including the machinery and other equipment used in mining such coal, and to report to the House at as early a date as practicable, and not later than Dec. 1, 1921.

The concluding section of the resolution carries the $50,000 appropriation. The resolution was referred to the Committee on Interstate and Foreign Commerce.

House Passes a Bill to Repeal Lever Law Despite Judiciary Committee Opposition

ALTHOUGH the House Committee on Judiciary was opposed to repealing the Lever Food and Fuel Control law, a coterie of members who were aggrieved because the government had invoked the Lever law against the striking coal miners a year ago, forced through the House a bill for the repeal of the law on Dec. 13. The bill now goes to the Senate for consideration.

When the bill was called up Representative Huddleston, of Alabama, urged that the bill, which proposed to repeal war measures except the Lever law, should be amended to provide for the repeal of the fuel law. He declared it was the most onerous and oppressive of all war laws. "The government stopped price regulation under it but continued action against the striking miners," he declared. He asserted that the law permitted the Department of Justice to intervene in any strike connected with the transportation or production of fuel.

Representative Blanton of Texas, said Congress acted wisely in leaving the Lever law on the statute books for the protection of the people. He declared that the coal miners had nothing to complain about, as some of them were receiving from $350 to $400 and even $500 a month for an 8-hour day. He charged that the miners waited until winter to strike, when they knew the people must have coal. He was willing to allow the law to remain.

Representative Bland, of Indiana, wanted to know Representative Blanton's authority for saying that coal miners received such high wages. Representative Blanton quoted from a speech of Representative Woods, of Virginia, as to wages earned by miners of the Borderland (W. Va.) Coal Corporation, showing that forty-three miners in 1918 and 1919 received gross monthly wages running from $253.60 to $547.82.

Mr. Bland offered an amendment to repeal the Lever law.

Representative Jones, of Texas, asked what was the object in retaining the Lever law. Representative Gard, of Ohio, said he personally did not believe in retaining the Lever law, but it had been thought it should be retained to check profiteering. Representative Sabath, of Illinois, also asked "Why exclude the Lever law from the repeal of war laws?"

Representative Volstead, of Minneapolis, chairman of the Judiciary Committee, which recommended repeal of war laws, except the Lever Act, said the Lever Act contains provisions respecting profiteering which are broader and more comprehensive than anything Congress could pass under its peace-time powers, and the committee thought it ought to remain in force, especially during this time when there has been so much complaint about profiteering, and profiteering certainly does exist to a very great extent, he added.

Representative Huddleston entered the debate again, saying he was for repeal of the Lever law, especially section 4. He charged that he had been induced to vote for the law by "false pretenses and false promises," and that a pledge of national faith was grossly violated by the Department of Justice in invoking the law against the striking miners when it had been promised that the law would not be applied to workers who combined to quit work in order to better their conditions.

Representative McLaughlin, of Michigan, said the Lever law should remain in force. He said section 5 of the law had checked profiteering and that the licensing system thereunder should have been continued. Representative Bland, of Indiana, came back into the debate, declaring the Lever law should be repealed because of the government's action against the miners. Representative Goodykoontz, of West Virginia, said the law should be repealed because the miners do not obey it. Representative Blanton, of Texas, returned to the discussion, favoring retention of the law. Representative Bland moved to repeal the Lever law and his motion was adopted by a vote of 180 to 135.

Bureau of Internal Revenue Makes Ruling On Distribution from Reserves

AN OFFICE decision has been made by the Bureau of Internal Revenue to the effect that the surplus and undivided profits referred to in article 1549 of regulation 45 means the earnings and profits accumulated since Feb. 28, 1913, and on hand at the date on which the dividend is paid. Distribution in excess of such undistributed earnings and profits represents a return of capital to the stockholder, and if the amount of such return of capital is in excess of the cost to the shareholder of his stock or its fair market value March 1, 1913 (if acquired prior to that date), the amount of the excess represents taxable income subject to both the normal tax and the surtax for the year of its receipt.

In case of the liquidation of the corporation, or the sale by a stockholder of his stock upon which he has had a certain return of capital, the amount so returned to him must be added to the amount received in liquidation, or to the selling price, as the case may be, for the purpose of determining the gain or loss arising from the transaction. If, prior to the liquidation of the corporation or the sale of stock, the shareholder has received a return of capital equal in amount to the cost of his stock or its fair market value March 1, 1913, the entire amount received by him represents taxable income subject to normal tax and surtax for the year in which received.

Shipping Board Also Had Fuel Problem

"ONE of the great problems of the past year has been that of fuel," says the Shipping Board in its annual report to Congress. "Bunker coals have been scarce at certain ports and local agents have in some instances despaired of procuring them."

Reviewing the work of the division of operations of the Emergency Fleet Corporation, the Board says that from twelve to fourteen sea-going tugs from time to time are towing barges in the New England coal trade between Hampton Roads and Eastern ports.

During the year the shortage of coal in New England has made it imperative, the Board says, that as much as could be handled be assigned to the trade. Consequently all types of vessels have been used in the trade without particular reference to type, as spot tonnage was needed and what was available at the moment had to be used.

The Board says the following types of vessels were used in the New England coal trade during the year: seventeen wood steamers, four concrete steamers, forty-three new "Lake built" steamers, six purchased or converted lakers five West or 88-ton type, five new steel cargo tonnage under 7,000 deadweight tons, twenty-one new steel cargo tonnage over 7,000 deadweight tons.

J. D. A. Morrow Calls Judge McGee's Report Inaccurate, Unfair and Misleading

IN an open letter to Governor J. A. A. Burnquist of Minnesota, under date of Dec. 18, J. D. A. Morrow, vice-president of the National Coal Association, denounces what he characterizes as flagrant misrepresentations embraced in an attack upon the bituminous coal industry by former Judge John F. McGee, former State Fuel Administrator of Minnesota, in a recent communication by the latter to the U. S. Senate Committee on Reconstruction and Reproduction. The letter reads as follows:

"I notice from copies of the Minneapolis papers of Dec. 12, which have just reached me, that at your suggestion Judge J. F. McGee has made public a so-called report to the Calder committee of the U. S. Senate. The printed extracts from this 'report' are so inaccurate, so unfair and so misleading as to require an immediate answer. Colonel D. B. Wentz, president of the National Coal Association, is absent in the Southern mountains, but I am familiar with the circumstances which Judge McGee discusses and am replying on behalf of Colonel Wentz, the National Coal Association and the coal producers whom Judge McGee maligns. Since his report has been made public, I am taking a like liberty with this letter.

"You say that the people of your state 'are entitled to know just what happened in Washington and in the Lake Erie coal fields during the present season.' I agree that they ought to know the facts, but I want you and them clearly to understand that they are not getting the facts from Judge McGee's 'report.'

Judge's Viewpoint an Important Matter

"In this connection it will clarify the situation if Judge McGee will explain whether he was interested in this season's coal supply for the Northwest merely as a public official or as the paid representative of certain coal consumers of the Northwest and whether throughout this matter he has occupied the position of a distinterested public official, or whether, in order to earn a fee, he has acted rather as a purchasing agent trying to obtain coal for his principals without regard to the needs of other coal consumers in other parts of the United States.

"I note the charges of bad faith against the railroads. Doubtless they will treat these charges as they deserve. Let me say that I personally know that Daniel Willard and the presidents of other Lake coal-carrying roads spent days of the hardest kind of work, in the full and frank recognition of their responsibility, trying to move all the coal to the Northwest and elsewhere which was needed in the public welfare. It is largely due to their efforts that your people are warm today.

"Judge McGee is quoted as saying 'the full supply of coal for the Northwest had been contracted for at $3.50 a ton.' That is not true. The list of 'contracts' to which he refers included mere promises to ship certain tonnages to the Northwest, provided other prior claims and obligations upon the producing companies left such tonnages available for Northwestern shipment.

"Moreover, all of these contracts were conditional engagements. No sensible Minnesota farmer would think of making a hard and fast contract in April to ship 5,000 bushels of No. 2 Red Northern wheat to a Minneapolis mill on a given day in September at a price fixed in April, because he knows perfectly well that his ability to grow that wheat is dependent upon wind, weather and crop conditions, and that after it is harvested his ability to make shipment to Minneapolis on a given day is dependent upon whether the railroad companies place cars at his siding to ship the grain.

"Similarly, coal production is subject to fires, floods and strikes among the miners, and shipments from the mine are dependent upon railroad cars being placed to move the coal. Every coal producer, in making his contracts, always provides that he will ship whatever tonnage is named in the contract, provided that 'fires, floods, strikes and railroad conditions do not prevent.' Every one of those Lake contracts to which the judge refers was subject to these customary provisos affecting the shipment of the coal. Thus the impression that the Northwest last spring bought 13,514,200 tons of coal at $3.50 per ton, without any 'ifs, ands or buts,' is grossly misleading.

"Furthermore, nearly all the coal producers having Northwestern coal contracts also had contracts with other customers. In order to insure fair treatment it is customary for the producer to agree that if fires, floods, strikes or lack of cars prevent him from shipping the normal output of his mine, then he will distribute what he does produce proportionately on all these contracts so that the loss in shipments will fall equally and fairly upon all his customers. The producers, therefore, by these very contracts which the judge cites, were prevented last spring from preferring shipments to the Lake over their other contract customers.

Charges Unsupported by Company Names

"The judge gives the impression that all these contracts were evaded, disregarded, repudiated and abrogated, saying that 'the only talk I heard at Cleveland was of high-priced coal ranging from $7 to $12 per ton.' To borrow from the judge's language, this impression is 'villainously' false. So far as I know, the judge gives no evidence to support his broad assertions about abrogation of contracts by coal producers. Let him present the names of the companies involved, if he knows any.

"The official published reports of the U. S. Geological Survey show that the mines of southern Ohio from April to July lost from 75,000 to 200,000 tons of coal production weekly because cars were not at the mines in which to ship the coal. The eastern Ohio mines lost from 100,000 to 300,000 tons weekly in the same period and for the same reason. In the Pittsburgh district these losses ranged from 200,000 to 500,000 tons per week, and in the West Virginia fields from 200,000 to 350,000 tons per week. The producers in these important Lake coal districts were obliged to reduce their shipments on all these contracts proportionately, as already explained. Of course, they were unable to ship the tonnages which the Northwest wanted them to ship under their Lake contracts because cars had not been available to ship the coal. But in making these reduced shipments proportionately among all their contract customers the producers were carrying out their contracts literally and faithfully.

Writes Contemptuously of Insinuations

"It also is insinuated that contracts between the coal producers and consumers in other sections of the country were abrogated indirectly through the Interstate Commerce Commission Service Order No. 10 in order that these producers might thereby ship high-priced open market coal to Lake Erie ports as a means of 'looting' and 'robbing' the Northwest. These insinuations are beneath contempt. Because of the demoralized railroad conditions, already referred to, resulting from the outlaw switchmen's strike and two years of Government control and operation of the railroads, the coal-mine operators having contracts to ship to the Lakes had lost so much production and had got so far behind on their shipments on the Northwestern contracts that the dock companies had to buy great quantities of coal in the market from other producers to supply the Northwest.

"Moreover, these other producers had to be prevented from selling this coal elsewhere in order to absolutely insure a supply for the Northwest. Order No. 10 had that effect but it did not abrogate a single contract for Northwestern shipments nor relieve a single coal operator in the slightest degree from any obligation to ship under such contracts. This was clearly understood by the coal operators, the rail-

way executives, the Interstate Commerce Commission and Judge McGee at the time the proposed order was discussed before the representatives of the Interstate Commerce Commission prior to its issuance.

"The judge says that the National Coal Association refused to agree to a special assignment of cars to the mines having contracts or orders for Lake shipments as a relief plan. He is right. However, he does not explain to you why the National Coal Association refused, and you ought to know. An illustration will make it clear. Having in mind the needs of all your consumers in the Northwest, could you agree to a plan under which the mines having contracts to furnish, say, Judge McGee's clients with coal, should receive a full supply of cars daily, taking the cars needed for this purpose away from the mines having contracts to supply your other Minnesota consumers so that the mines serving the judge's clients would be operated six days a week, and the mines serving other coal consumers of your state would be operated two or three days a week? That illustrates the working of the assigned-car plan. Moreover, the coal miners in two important Lake coal-producing districts were threatening to go on strike if an assigned-car plan was adopted, because of the resultant discrimination in working time between the mines with such special car supply and the other mines. The judge may have been willing to risk such a disturbance of coal production, but the Interstate Commerce Commission, the railway executives and the coal operators would not take any chance of coal strikes when the Northwest was as short of coal as it was last July.

"Another charge is that the National Coal Association defeated a proposal to require those operators having Lake contracts to ship the full quantity on these contracts. It is intimated that if this plan had been adopted the Northwest would have obtained all of its coal on those low-priced 'contracts,' already referred to, and that the refusal to adopt such a plan was a nefarious scheme to permit the 'looting' and 'plundering' of the Northwest. Again the judge is ignorant of the facts.

How Unfair Distribution Was Avoided

"Precisely this plan advocated by the judge was discussed by railway and coal men, and a proposed plan in this form was submitted to eminent attorneys. They said: 'Here is the A.B.C. Coal Co. producing 100 cars of coal a day. It has contracts with a Northwestern dock company, with a big steel company and big city electric light plant. Under these contracts it is obligated to ship 50 cars a day to the dock company, 30 to the steel company and 20 to the electric light company. That coal company is now receiving from the railroads 60 cars a day for shipment of its coal. Under your proposed order it must ship 50 of those 60 cars to the dock company, leaving only 10 cars to be divided between the steel company and the electric light plant. Neither of those customers can possibly get along on 5 or even 10 cars a day. Their contracts are equally good in any court with the contract of the dock company. If such an order as you propose is issued by the Interstate Commerce Commission, that electric light company or that steel company can go into court, get an injunction on this showing and tie up your whole Northwestern coal supply indefinitely in the courts.'

"That settled the matter with the practical railway and coal men. They were not looking for lawsuits and injunctions, but for means of getting coal to the Northwest. The attorneys advised that the only order of the Interstate Commerce Commission which would have a chance in court would be an order of the kind which was finally issued as Service Order No. 10.

"Now a word as to prices. As already explained, it was necessary to make up the deficit in the Northwestern supply by purchases in the open market. The judge gives the impression that Service Order No. 10 compelled the Northwest to pay more for its open-market coal than similar coal cost other buyers. This is flagrantly false. In fact, as the judge well knows, the Interstate Commerce Commission, the railways and the National Coal Association were attacked because everybody knew that the Northwest could buy its coal under Service Order No. 10 cheaper than other consumers could buy similar coal in the open market. The judge himself knows that the Public Service Commission of Ohio bitterly assailed Order No. 10 on precisely this ground, asserting that it permitted the people of Minnesota, the Dakotas and Wisconsin to buy Ohio coal at cheaper prices than Ohio people could buy at. This was due to the fact that mine operators were compelled by the order to ship a certain amount of coal to Lake Erie ports every day, and were notified that if they failed to ship this coal or failed to sell it promptly upon arrival, cars would be withdrawn from their mines and they would be prevented from shipping any coal anywhere to anybody. Under these circumstances the order in question, instead of increasing the coal bill of the Northwest, actually reduced it.

"To complete the unfairness of his statements, the judge demands an investigation, thus giving the impression that the National Coal Association has endeavored to conceal its actions in respect to relief for the Northwest and other parts of the country. On the contrary, throughout this entire matter the National Coal Association has made every effort to have all its actions, and the reasons for them, clearly understood by government officials and the public. The whole record of the association is open to Senator Calder's committee or any other proper agency that desires to know the facts."

Contradictory Report of Judge McGee Blames Operators for High Prices in Northwest

JUDGE McGEE, former Fuel Commissioner for Minnesota, has submitted a report to the Calder Committee on Reconstruction and Production of the Senate, in which he attacks the National Coal Association as being responsible for the high prices of coal in the Northwest, and asking for opening of the books of the producing companies to determine their costs. The Judge suspects that the coal association deliberately turned down the Gutheim plan for handling the emergency situation as to the Northwest because the plan which was adopted was susceptible of developing the situation which worked out—excessive prices in the open market. These he thinks the dock companies had to pay or have their priority order cancelled. Yet the Judge admits that the big difficulty was transportation, which hardly could be said to be under the control of the National Association.

The announcement by the Calder committee, published during the week, is along the line of the report made to that committee by Judge McGee. The coal trade in the Northwest is inclined to view any statement from the Judge with irritation or indifference, because of his propensity to take the attitude that being in the coal business was equivalent to being a crook, and because such outbursts are something of an old story. He apparently sees no inconsistency in his complaints that the dock companies were held up to an extortionate price when aligned with his own insistence that the dock companies pay the prices he now complains of to get the coal. A few short months ago he was uttering ferocious anathemas against those who would not buy coal at any price to get it forwarded, declaring that unless it was done the Northwest would freeze during the winter. It is true that there was no serious need of coal or there would be compulsion to ship emergency stocks all-rail, regardless of the cost, and only the extraordinarily mild fall and winter averted trouble. It is somewhat doubtful, however, if the all-rail prices would have been materially higher than the emergency prices which he urged then and now criticises.

PRODUCTION OF COAL AT 193 mines in Indiana during the week ended Dec. 11 is reported as 646,779 net tons, as compared with 694,622 tons at 192 mines the week preceding. These mines operated 73.41 per cent of the full time, with car shortage responsible for 13.16 per cent of time lost. Of the remaining causes of lost time mine disability was responsible for 10.56 per cent and labor trouble for 2.25 per cent.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

MANY of the special circumstances which added tremendous difficulties to the conduct of business affairs during the past year are in progress of betterment. With these factors corrected, in the opinion of Roger H. Williams, vice-president of the National Bank of Commerce in New York, we look forward to 1921 with a high degree of confidence. The progress of improvement is not so great and rapid that we can now predict a year of unusual business activity and prosperity, but it seems safe to expect that in 1921 the conduct of business enterprise should be far easier than it has been this year and that the general average of success should be good.

"In addition to credit improvement," he continued, "we see considerable progress being made in the readjustment of inflated values to new price levels. We may feel confident that in many of our important commodities the worst is over in respect to the drop in price. Fluctuations in these commodities hereafter should be within narrower limits and therefore susceptible of more accurate business calculations.

"The drop in prices did not become operative in all lines at the same time nor did it develop everywhere at the same rate, and therefore we must expect this phase of the situation to run through a succession of stages before ultimate stability is reached. Because of the close interrelations existing among market conditions affecting all lines of trade, we cannot expect complete stability for the whole businss structure while there remain substantial parts of it still in a state of unsettlement."

Commenting on the question whether public recession in buying should be considered a factor of business betterment Mr. Williams said: "As long as recession in buying represented lessened extravagance and served to take the edge off price speculation and to relieve the strain on credit, it was a salutary business movement—a desirable corrective. But when it swings so far as to paralyze legitimate business and disorganize the orderly flow of trade, it becomes an adverse factor, in itself calling for correction.

"The answer as to when the public will again begin to buy and merchandise will resume a normal movement, may be found in any or all of the foregoing aspects of human behavior, but these aspects cannot be reduced to definite data, so that the question of when the public will resume buying must remain the great uncertain element in our present business outlook."

Truck and Wagon Plants Reopen At Pontiac, Mich.

The General Motors truck plant at Pontiac, Mich., has resumed operations after a period of four weeks' idleness. About half the workers are re-employed on a production schedule calling for 400 machines for the balance of this month. According to W. L. Day, manager, normal operation may be expected early in the new year. After being suspended since the middle of October, operations in the Milburn Wagon Co. body factory at Toledo, Ohio, were resumed Dec. 13, when the plant began work on an order for several million dollars' worth of automobile bodies for the General Motors Co.

Rubber Shoe Firm Curtails

The Boston Rubber Shoe Co. of Malden and Melrose, Mass., discontinued bootmaking beginning Dec. 18. Some of the older hands have been given other positions, it is said. The Malden Knitting Mills plant has just shut down indefinitely, being overstocked with goods.

Carpet Mill Resumes; Force Cut

Resumption of operations was made Dec. 13 by the plant of the Hodges Fiber Carpet Co., Indian Orchard, Mass., which had been closed since Nov. 9, when 350 members of the Textile Workers' Union refused to accept a 15-per cent wage reduction, which the management stated was the only way the plant could be kept running. Considerably less than the full working force of the company has returned to work. It is said that under the old scale the men were receiving between $35 and $40 per week and the women between $22 and $24 weekly.

Steel Mills Close; More May Follow

Plants of the Wheeling Steel Corporation throughout the Wheeling (W. Va.) district have been operating at less than half capacity since Monday, Dec. 13. Price reductions have brought no new business, officials of the corporation said. The situation has been termed a "consumers' strike." On Dec. 16 a wage cut from 46 to 38c. an hour for all laborers, effective at once, was announced by four Ohio Valley plants of the corporation. Notice also was given of abolishment of extra pay for overtime. The cut is said to amount to $1.98 per day for some workers. The Eastern Steel Co. mills closed Dec. 11 for an indefinite period, about 1,000 men being affected. Heads of independent steel plants at Youngstown, Ohio, indicated Dec. 16 that the mills would be practically idle from the end of the week until the first of the year, owing to lack of orders. The contemplated suspension would affect about 20,000 workers.

Bridgeport Plants Close; 5,500 Idle

Three factories in Bridgeport, Conn., employing in all 5,500 persons have closed temporarily. The Remington Arms-Union Metallic Cartridge Co. closed Dec. 16 until after New Year's, the Singer Sewing Machine Co. closed the same day until Jan. 15, and the Bassick Co., metal workers, is closed until after New Year's.

Singer Plant Closed Temporarily

The main plant of the Singer Sewing Machine Co., at Elizabeth, N. J., closed Dec. 22, and will not reopen until Jan. 5. Prior to the war the company closed its plant twice a year to take inventories, the length of the shutdowns being ten days to two weeks, but during the war the factory never closed for more than two days during the holiday period. About 8,000 persons are employed at the plant.

Foreign Markets and Export News

British Coal Exports Greatly Reduced

British customs statistics, according to Consul C. E. Asbury, Cardiff, Wales, give the following figures with regard to the quantities and values of coal exported from the United Kingdom during the month of October in the years 1913 and 1920. It is a remarkable fact that although the quantity exported in 1920 is only slightly more than 20 per cent of that of 1913, the value is considerably higher.

The quantities are stated in long tons and values in British sterling:

To	Quantity		Value	
	1913 Tons	1920 Tons	1913	1920
Russia	756,112	8,008	£544,791	£34,075
Sweden	503,863	50,802	336,257	273,258
Norway	200,079	46,364	122,874	257,213
Denmark	281,369	68,235	185,511	375,217
Germany	835,839	.....	504,802	.....
Netherlands	167,299	11,181	105,065	32,959
Belgium	181,591	30,899	104,320	139,854
France	1,077,519	745,608	699,816	2,858,317
Portugal	88,192	25,379	65,466	124,248
Azores and Madeira	6,566	.....	5,532	.....
Spain	261,776	30,794	181,590	143,508
Canary Islands	67,195	12,412	49,367	64,691
Italy	910,513	171,837	652,921	802,657
Austria-Hungary	103,433	1,401	72,520	6,034
Greece	84,033	4,987	64,966	29,773
Algeria	108,422	17,259	72,102	79,094
French West Africa	7,690	8	6,830	52
Chile	35,310	112	29,244	661
Brazil	147,943	.....	131,500	.....
Uruguay	33,612	2,835	27,180	14,395
Argentina	297,148	11,043	248,208	58,704
Channel Islands	14,726	8,410	10,909	18,707
Gibraltar	25,311	49,069	18,095	256,389
Malta	42,068	19,528	30,065	73,814
Egypt	229,100	51,619	169,078	236,261
Aden and dependencies	20,881	5,529	18,065	20,733
British India	14,216	.....	12,232	.....
Ceylon	23,764	.....	20,600	.....
Other countries	203,005	38,708	165,918	180,061
Total of:				
Anthracite	281,443	151,948	233,702	582,897
Steam	4,952,643	1,058,047	3,468,633	4,705,545
Gas	1,026,497	164,119	653,604	645,631
Household	159,373	3,878	106,186	11,099
Other sorts	319,517	39,506	203,120	163,325
Total	6,739,473	1,417,498	4,665,245	6,108,497

Entente Receipts of German Coal Are Improving

The Economic Review, London, gives the following quantities of coal delivered by Germany to the Entente in accordance with the Spa agreement:

"August.—The quantity stipulated, with the exception of 27,900 tons, by which the 90,000 tons to be delivered to Italy by Upper Silesia fell short, owing to the disturbances in that province during the second half of August, when the Italian trucks which were to carry away this coal could not reach the mines.

"September.—From the Western districts only 1,887,000 tons instead of 1,910,000 tons were delivered. In Upper Silesia, where the German Coal Commissioner has no influence on the deliveries, the 90,000 tons due to Italy again fell short by 16,000 tons. Germany has expressly pointed out that she is not responsible for these Upper Silesia arrears. The Entente Powers have not as yet agreed to Germany's proposal to send the coal destined for Italy by water via Stettin.

"October.—Deliveries again became normal. During the first ten days 620,000 tons were delivered from the Western districts. Every effort was made to deliver from the Ruhr district, Aix-la-Chapelle and the Cologne lignite district the full amount for which Germany is responsible, in addition to the small September arrears.

"The difficulties of delivery are still extraordinarily great, since the output conditions were far less favorable in October than in September, owing to the smaller number of working days in the various months and to the larger consumption of coal by the mines themselves. Then, too the railways consumed more."

Tidewater Coal Exchange Asks for Mine Reports

The Tidewater Coal Exchange, Inc., Grand Central Palace, New York City, now has with a printer the proof of a classification of mines in which it hopes to include all mines now shipping, or which expect to ship, their coal to the exchange for the account of its members.

J. W. Howe, commissioner, announces that the exchange will not, however, include in this classification any mine from whose operator it has not received direct request to classify, and this request must be made on a form provided by the exchange.

Mr. Howe advises that requests must be received not later than Monday, Dec. 27, 1920, as the classification will become effective Jan. 10, 1921, after which the new exchange will discontinue the use of the classifications of the old exchange, and coal shipped to the new exchange from mines not included in this new classification will be rejected at the piers, and the railroads will be requested to embargo further shipments from such unclassified mines to the exchange for the account of its members. Rule 29 requires members to have all coal shipped to them at tidewater consigned to the exchange for their account, hence under this rule members of the exchange are unable to receive at Tidewater coal from unclassified mines.

Export Revival Expected in January

While there is no demand for export coal and that branch of the trade faces a serious situation, coal men profess to see a ray of sunshine breaking through the clouds of non-activity. According to C. Andrade, Jr., president of the Wholesale Coal Trade Association, Europe has realized that she has a large supply of coal and refuses to bid until she uses up the excess supply. The demand is expected to show life in January. Prices at that time will be very near normal, as a result of the eased situation in this country, but the demand should be brisk.

"Europe became overstocked," says Mr. Andrade, "because of the panicky buying which was experienced just after the outlaw switchmen strike, which caused a cessation of export shipments. European buyers, with shipments reduced, made commitments for three times as much coal as could be normally used, on the assumption that only a third of the contracts would be filled. Instead when the market eased and coal tumbled, large supplies were sent abroad and the excess coal accumulated. Then Europe quit buying.

"Export coal will not exceed four per cent of the total production of the country during the fiscal year ending March 31, 1921, in my opinion."

THE HOME SITUATION in regard to bituminous coal has improved to such an extent within the last few weeks that the Canadian Railway Commission has decided to partially remove the embargo on exports of bituminous coal from Canada. Shipments under individual license from the Maritime Provinces will now be allowed. The production of bituminous coal in all mining areas of the Dominion has shown a great increase during the recent weeks.

CARDIFF REPORTS SALES of the best large steamer coal at £4 15s @ £5 and the best smalls at £4. It is stated that the Swedish naval administration has postponed contracting owing to the high prices asked for British coal, which, it is insisted, are much above American offerings.

Japanese Market Is Inactive; Fushun Has Good Export Possibilities; Kaiping Deliveries Are Better

In their market report of Oct. 21, issued at Shanghai, Wheelock & Co. advise that the Japanese coal market has been very inactive. Preparations are being made to commence negotiations for next year's supplies and until these mature further price indications are impossible. In the meantime the unexpected sudden fall in exchange is bound to have a serious effect on prices.

The Fushun market continues fairly active, with a large export business in prospect, as normal output from the mines is now assured.

Kaiping deliveries from the north are becoming more regular again, which has allowed movement under contract to be maintained and stocks have recovered.

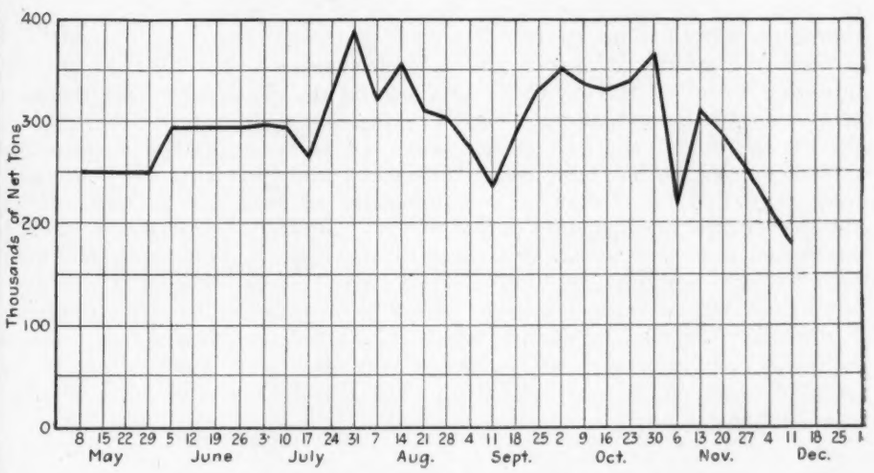
Coal prices are quoted in the report as follows:

Japan Coal:		
Miike lump, Miike small, Miike dust	Contracted for	
Kishima lump	Tls. 15.00	per ton ex wharf
Shakano lump	Tls. 13.00	per ton ex wharf
Arate lump	Tls. 12.00	per ton ex wharf
Shimopamada Kirigomi	Tls. 11.00	per ton ex wharf
Shinshakano Kirigomi	Tls. 11.00	per ton ex wharf
Yoshinotani No. 1 lump	Tls. 12.00	per ton ex wharf
Yoshinotani No. 2 lump	Tls. 10.00	per ton ex wharf
Ochi lump	Tls. 12.00	per ton ex wharf
Kaiping Coal:		
No. 2 lump	Tls. 13.50	per ton ex wharf
Washed nuts	Tls. 13.50	per ton ex wharf
Washed slack	Tls. 10.50	per ton ex wharf
No. 1 slack	Tls. 9.00	per ton ex wharf
No. 2 slack	Tls. 8.50	per ton ex wharf
Fushun Coal:		
Dust	Tls. 10.00	per ton ex wharf
Dust Kirigomi	Contracted for	
Dust lump	No stock	

Export Dumpings by Ports
(NET TONS)

	Week Ended Dec. 12	Week Ended Nov. 28
Philadelphia	56,000	62,000
Baltimore	78,000	69,000
Norfolk	233,000	257,000
Charleston	7,000	11,000
Total	374,000	399,000

Export Coal Dumped at Hampton Roads



Central Pennsylvania Miners Cast Vote

An election of officers for District No. 2, United Mine Workers of America, was held on Tuesday, Dec. 14. It was stated at headquarters that the result would be announced on Dec. 25. The following were the candidates receiving votes: For president, John Brophy, the present incumbent, and James Freeley of Dunlo; for vice-president, James Marke, the present incumbent; Dominic Giolitti of Nanty-Glo and John McCrory of Flinton. There are four candidates for national board member to take the place of William Donaldson, deceased. They are John Ghizzoni of Wishaw, Joseph Poggiani of Crenshaw, William McCune of Arcadia and T. P. Dolan of Rossiter. Richard Gilbert has no opposition for secretary-treasurer. Herman Carletti has no opposition for district board member of Territory 5 and John Yusko is unopposed for district organizer.

Efforts to Effect a Working Agreement in Mingo County Unavailing

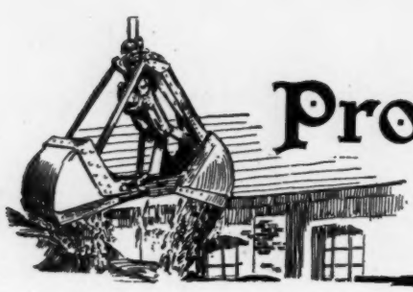
EARLY in December attempts were made by the mine workers in the Mingo (W. Va.) field to arrange with Governor Cornwell of West Virginia and Governor Morrow of Kentucky for a settlement through their endeavor of the dispute between the striking miners and the coal operators, but the efforts made did not materialize into anything more than mere propaganda. Early in the strike Federal mediators were in the Williamson field attempting to have the operators and miners adjust their differences, but there was no basis upon which the operators and miners could be brought together, the difference between the contending parties being the acceptance by the operators of the "closed shop," which was something to which the operators would not agree.

On Dec. 15 it was asserted by the Williamson Operators' Association that all but five of the eighty-eight mines in the Mingo (W. Va.) field which had been closed down by the strike were already in operation, and that production was 87 per cent of normal. It was further stated that the few remaining mines would be opened as soon as mine forces could be recruited. During the second week of the month the operators asserted that fully 200 men were brought into the field and that additional men would be added during the remainder of the month. Miners are allowed to picket incoming trains, and in a number of instances men working in the field were induced to go to union fields. Nevertheless, the operators were able to prove that they had been obtaining new men by pointing to the number of mines in operation. The companies offer work to all their former workmen who are not members of the union.

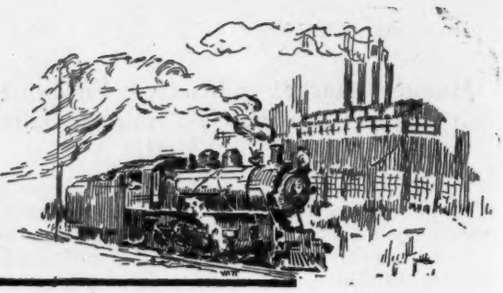
A JOINT CONFERENCE OF anthracite mine workers and operators will be held in Philadelphia today, at which time it is expected that the employers will make final answer to the demands of the mine workers, who want an increase in wages that will make their day rates more closely comparable with those of the bituminous mine workers, whose wage has been based on discontinuous work.

ARRIVAL OF AMERICAN COAL in France during November totaled 845,000 tons, according to figures just made available. Of English coal the arrivals were 895,000 tons.

EACH OF THE TIDEWATER coal carriers has under consideration the enlargement of its facilities for accommodating an increased export coal business. Early in the spring it is expected that extensive additional facilities will be installed. As the equipment at the export piers has been used at the maximum of its capacity for many months, it is believed that a general overhauling and improvement of existing facilities also will be undertaken.



Production and the Market



Weekly Review

RECORD production of bituminous coal is being maintained despite the lack of demand for spot coal. The prices bid on coal for immediate delivery continue to drop and although production in the week of Dec. 11 set a new maximum for the year, with 12,865,000 net tons, it is generally conceded that this, together with the high records of the two weeks preceding and a good production in the week of Dec. 18, represents a pre-holiday spurt.

Since the middle of April, when the production of bituminous coal hit the low point for the year, the general tendency has been upward and since the first week in October, or for the past eleven weeks, the average rate of production has been nearly 12,500,000 tons per week. Production to date is now in excess of that obtained in the corresponding period of 1917, and without question is now sufficient to satisfy all demands, both for consumption and storage, after export needs have been met. With but two weeks to go it is evident that the total production of bituminous coal in 1920 will more than exceed 550,000,000 tons, and thus be second only to the war year 1918, when the output was 579,000,000 tons.

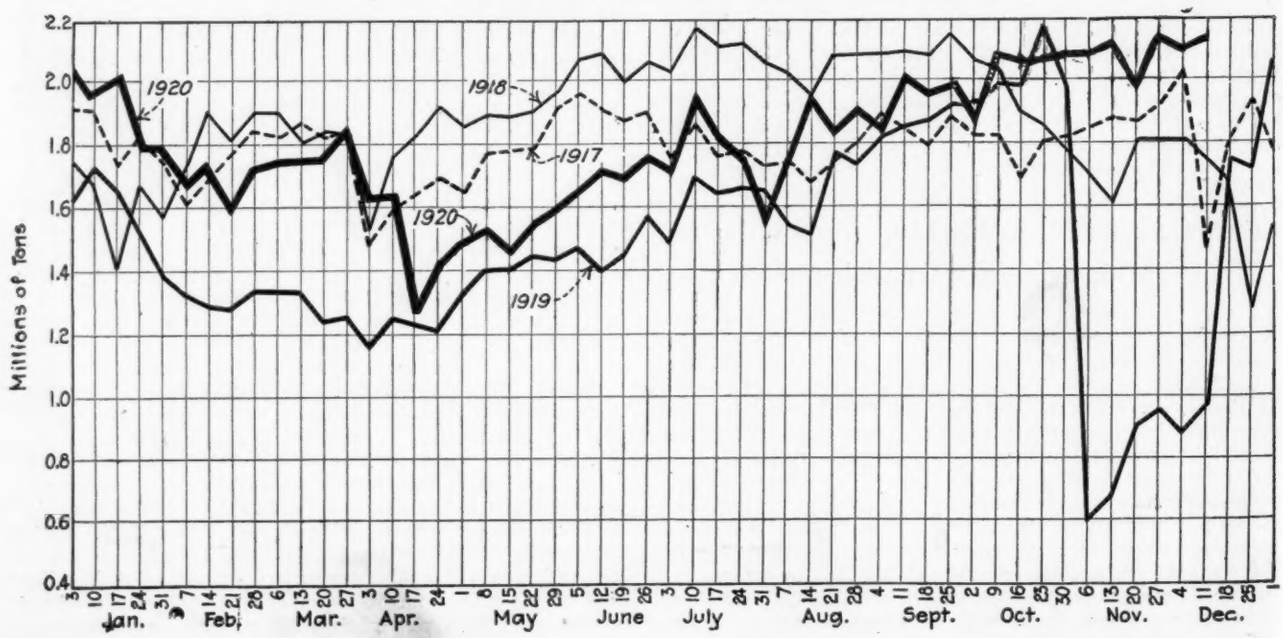
The pressure being exerted by producers and shippers to maintain production is meeting a general reaction on the part of the buyers. With practically no demand for free coal, shippers are crowding deliveries on contracts on which they fell in arrears last summer and autumn. For several weeks, as shipments on foreign account at Hampton Roads and Baltimore have fallen off, the movement to New England has increased. Wholesalers in New England under contract to take coal from the southern fields now find themselves embarrassed by a flood of coal for which they find little demand among their customers in New England. The docks of these wholesalers in New England ports are crowded to capacity, and it is evident that New England coastwise movement must rapidly taper off.

New England Well Stocked

All-rail deliveries to New England decreased from 5,211 cars the week of Dec. 4 to 3,651 cars in the week of Dec. 11, a drop of 1,560 cars, or nearly 30 per cent. It is now estimated that the receipts of bituminous coal in New England by tide and rail for 1920 will be approximately 22,000,000 tons, or about 1,500,000 tons less than in 1917, 5,000,000 less than in 1918, but 2,000,000 more than in 1919. In view of the general industrial inactivity in this section and the mild winter, it appears that New England not only has an ample stock for this time of the year but probably will have a surplus on hand next spring.

Consumers who do not need coal because their plants are down; buyers who had purchased coal speculating on a continuance of the high spot market and others who see in the present declining market opportunity to obtain supplies at prices below their outstanding contracts are crowding the shippers for release from their obligations to purchase. The high-volatile fields in both northern and southern West Virginia and the eastern Kentucky fields have been seriously affected from this cause within the last few days. There is, however,

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

nothing unusual in this development because contracts for coal are recognized as particularly vulnerable.

BITUMINOUS

Production again reached record figures for the week ended Dec. 11, when the output was estimated at 12,865,000 net tons, according to the Geological Survey, an increase of 33,000 tons over the revised figures for the preceding week, which up to that time had been the record since the last pre-strike week in October, 1919. The present rate of production is far above that in the corresponding period in any of the preceding three years, and is the more remarkable with the withdrawal of priority in the use of open-top cars for the loading of coal. Loadings on Monday, Dec. 13, were very heavy, amounting to 45,144 cars, although this declined sharply on Tuesday. Cumulative production now stands at 525,403,000 net tons. The year is within thirty-one million tons of 1918, but is now ahead of 1917, a year when requirements were large and production about equalled consumption.

Car shortage losses have almost disappeared and in many sections empties are being held over each day. The aggregate production is not suffering much from continued poor placements on the B. & O. and C. & O. systems in the Northern and Middle Appalachian regions. Supply for the eastern Ohio (No. 8) District improved slightly during the week, being estimated at 70 per cent of capacity. Railroads are receiving requests, through the American Railway Association, to load or send defective equipment to the owning roads in order that extensive repair programs may be carried out during the period of industrial contraction.

Labor is paying earnest attention to the work in hand and there are only scattered reports of production losses from unsettled labor conditions. In some localities the market depression is causing operators to do away with the bonuses and extra time that had been paid to the men as an inducement for full working capacity.

Prices Continue to Decline

Spot-market quotations showed a lower range for the week ended Dec. 11. Steam demand was extremely light and for the most part confined to small lots for immediate requirements only. Consumers are using heavy stocks accumulated during the buying panic and are not providing for the future, in the face of the continued industrial slump. The domestic market was also extremely quiet, due to the mild weather. Export movement was largely on contract and what little new business was closed went at new low figures. There apparently can be no permanent improvement until the basic condition of things is straightened out properly. The cost of production of raw materials and manufactured articles is practically unchanged and the only reason for reduction of coal prices is an artificial one, affecting the profits and extending into losses for the producers. Many efforts to move coal by consignment are resulting in forced low sales to avoid demurrage.

The following table shows the trend in the spot steam market (mine run basis, net tons, f.o.b. mines):

	Nov. 1919*	May 1920	Aug. 5 1920	Dec. 9 1920	Dec. 16 1920	Dec. 23 1920†
Pittsburgh steam	$2.30	$4.00	$10.00	$4.00	$3.75	*$3.25*
Pittsburgh screened gas	2.30	4.50	12.00	4.75	4.50	*3.75*
Hocking	2.50	4.75	9.00	4.25	3.75	*3.00*
Franklin, Ill.	2.35	3.75	6.50	5.00	4.00	*3.40*
Indiana 4th vein	2.35	3.40	7.50	4.00	3.25	3.25
Eastern Ohio, No. 8	2.35	4.50	10.50	4.50	4.00	*3.40*
Fairmont	2.50	6.75	13.50	4.25	3.75	*3.00*
Kanawha	2.60	6.75	14.00	4.50	4.50	*3.50*
S. E. Kentucky	3.00	6.00	10.50	5.25	4.75	*4.00*
Western Kentucky	2.35	3.50	5.25	4.25	4.00	*3.75*
Clearfield	2.95	6.25	12.00	4.75	4.75	*3.75*
Cambria and Somerset	2.95	6.75	13.50	6.00	6.00	*4.75*
New River	2.70	6.50	14.00	5.25	5.00	5.00
Pocahontas	2.35					

*Government prices.
†Advance over the previous week shown in **heavy type**, declines in *italics*.

Cancellations are numerous. Contract customers are cutting down their requirements or are cancelling their agreements outright. There is no market for off-grades and it is only a question of time until good coals will be in the same class. Numerous operations have been closed, some over the holiday season and others to await a market that will permit them to run without a loss.

Estimates of Production

From the Weekly Report of the Geological Survey

BITUMINOUS COAL

Total bituminous, including coal coked

	1920 Week	1920 Calendar Year to Date	1919 a Week	1919 a Calendar Year to Date
Nov. 27b	11,488,000	499,706,000	5,334,000	420,046,000
Daily average c	2,188,000	1,782,000	956,000	1,492,000
Dec. 4b	12,832,000	512,538,000	5,245,000	425,291,000
Daily average	2,139,000	1,789,000	874,000	1,480,000
Dec. 11d	12,865,000	525,403,000	5,800,000	431,091,000
Daily average	2,144,000	1,799,000	967,000	1,469,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Counting Thanksgiving Day as 0.25 of a working day. (d) Subject to revision.

ANTHRACITE

	1920 Week	1920 Coal Year to Date	1919 a Week	1919 a Coal Year, to Date
Nov. 27	1,692,000	58,973,000b	1,759,000	61,460,000b
Dec. 4	2,051,000	61,024,000b	2,014,000	63,474,000b
Dec. 11	1,915,000	62,939,000b	2,120,000	65,594,000b

(a) Less 2 days' production during first week of April, to equalize number of working days covered for the 2 years. (b) Revised to agree with Weekly Report No. 178, pages 2 and 7.

BEEHIVE COKE

United States Total

Week Ended Dec. 11c	Week Ended Dec. 4b	Week Ended Dec. 13	1920 to Date	1919a to Date
1920	1920	1919		
374,000	375,000	361,000	19,941,000	18,640,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision.

Movement to Tide continued at a little over a million tons for the week ended Dec. 12, or at the rate of 4,445,000 tons per month. Exports continued to decline and coastwise movement to increase as shown in the following table:

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total
Coastwise to New England	70,000	19,000	23,000	114,000	.....	226,000
Exports	.....	56,000	78,000	233,000	7,000	374,000
Bunker	99,000	15,000	13,000	55,000	.....	182,000
Inside Capes	.....	51,000	26,000	3,000	.....	80,000
Other tonnage	178,000	.....	.....	.....	.....	178,000
Totals	347,000	141,000	140,000	405,000	7,000	1,040,000

Cumulative Lake movement for the season totaled 23,667,000 net tons, of which 22,408,000 tons were cargo and 1,259,000 tons vessel fuel. This is less than the record of any of the four preceding years except 1919, which it exceeds by 766,000 tons. Northwest coal stocks are reported adequate for the season in view of curtailed steam consumption and the domestic saving effected by the prolonged mild weather.

ANTHRACITE

Production declined somewhat during the week ended Dec. 11, being placed at 1,915,000 net tons by the Geological Survey, a decrease when compared with the preceding week of 136,000 tons. Cumulative production for the coal year is over two and one-half million tons behind 1919. Steam sizes are becoming hard to move and independent quotations have been forced down to company figures. Some recession in independent domestic quotations is noted.

COKE

Beehive coke production during the week ended Dec. 11 is estimated by the Geological Survey at 374,000 tons, being practically the same as that of the preceding week. Many operations are closing down with the slack demand. Some contracts for the first half year of 1921 were made on furnace coke at a ratio of 5 to 1 with a minimum invoice price of $5.80 per net ton f.o.b. ovens. Spot coke prices declined further, furnace being quoted $5.50@$6 and foundry $7@$7.50.

Reports From the Market Centers

New England

BOSTON

Prices Still Lower — Market Cargoes and Rejected Coal a Feature — Dull Business at All Tidewater Piers—Railroads Reduce Motive Power — Quotations Show Wide Range — Anthracite Situation Saved Only by Weather.

Bituminous—Ordinary grades from central Pennsylvania have dropped to less than $3, and the output of certain mines that are pressed to move coal does not rise more than 50c. above that mark. In addition to a certain amount of railroad fuel that has been rejected there have been numerous cases where coal has been shipped in excess of contract or purchase. The prices on such forced sales have dropped to new low levels. There is no evidence of any buying interest and in industrial circles there is such an air of gloom that nobody looks for any buying for several weeks to come.

To add to the depressing effect of rail coal seeking an outlet there have also come to light several cargoes from Hampton Roads that are frankly coming forward on the market. Doubtless they will be disposed of at some dumping ground, although one of the Boston utilities is in the market for prompt coal. The chances are, however, that this kind of buying will be narrowed to purchases at the piers for certain designated bottoms that are already under charter. Quotations on Pocahontas and New River, Pool 1, have been made at less than $11 alongside Providence, Boston, or Portland. Any such price must be tentative, for no buyers with any grasp of the situation would pay such a price.

The off-shore market is fading fast. Agencies who were so confident of strong export demand and provided no coastwise business are now besieging corporation buyers in this territory. Even those who have contracts are stuffing their customers with all the traffic will bear, especially now that they, too, are finding so little comfort in the overseas market. Bunker coal has been purchased at less than $8 f.o.b. Norfolk and there are bound to be further reductions.

Conditions at Tidewater reflect the dullness of trade. There are odd lots at all terminals which shippers are harrying the trade to buy, but responses are few and far between. Heavy demurrage charges are accruing and yet the longer the coal is held the lower goes the prices.

It is notable that railroad movement is slowing up. Shipments all-rail that were coming through to New England points in less than 6 days are now taking 12 and 15 days. The roads explain this by saying that because of light business they have been obliged to lay off locomotives and crews. So far as steam grades are concerned this is of course working no hardship and it is only natural that carriers should protect themselves as best they can. Coal in transit is still being seized in certain districts, but usually by originating roads in sections where only small reserves are ordinarily carried.

Current quotations on bituminous at wholesale range about as follows:

	Clearfield	Cambrias and Somersets
F.o.b. mines, per net ton	$2.75@4.15	$3.60@5.75
F.o.b. Philadelphia, per gross ton	5.74@7.25	6.80@9.20
F.o.b. New York, per gross ton	6.10@7.70	7.25@9.65

Anthracite—At this writing stocks in the hands of retail dealers is probably less than at any time in recent years. The situation would be exceedingly serious were it not for the wonderfully mild weather. Usually the rivers in Maine are closed to navigation soon after Dec. 1, but the weather is still mild and the ports are receiving coal. Water shipments are very light and rail movement has increased but little.

Tidewater—East

BALTIMORE

Saggy Market in Evidence — Demand for Home and Export Coal Light — Ample Reserves of Soft Coal—Anthracite Receipts Good and Danger of Famine Is Over.

Bituminous—A sagging market in every phase is before the coal trade just at present. The call for coal on export, while showing up a bit better as indicated in the chartering, is still very weak, and domestic demand is far below the standard looked forward to for December. The approach of the holidays means still further cut in consumption, which will in some measure, of course, be offset by the shut-down of mining at Christmas and New Years.

Prices are over a rather wide range, but generally low, with considerable discrimination being shown by consumers as to classes of fuel. The day of "anything black" passing for coal is over, for the time being at least. The Tide prices on the various pools of gas coals are typical, as follow, f.o.b. piers, Baltimore: Pool 37, $5.75@$8; Pool 38, $7.50@$7.75; Pool 60, $7.50@$7.75; Pool 61, $7@$7.25; Pool 30, $7.75@$8; Pool 31, $7.25, and Pool 34, $6@$6.25. Steam coals at the mines are also offering over a range of 50c. on the same grades at times. Pool 9 is worth pretty consistently $5 f.o.b. mines per net ton, while Pool 10 is bringing an average of about $4.50; Pool 11, $4@$4.25, and Pool 18, $3.50.

Export loadings in December will fall far short of those of previous months. For the first half of the month the loading was around 130,000 tons cargo and 12,000 tons bunker coal for the same ships.

Anthracite—The hard coal situation continues to improve, larger movement and moderate weather combining to get the trade in good condition. Receipts so far this month indicate that the total income of coal for the month will run over 60,000 tons. While an average run like this does not cover all the half filled orders here it keeps all thought of a coal famine out of the air, as the coal men are able to apportion deliveries in order to keep all satisfied.

There is still considerable talk in the trade as to the effect of the recent increase of rentals of yards by the railroad interests and as to whether this should bring a higher selling rate at once. The general opinion seems to be, however, that despite the cut-off of the old margin of profit by the new increase in overhead, the present is not an opportune time to raise retail prices.

PHILADELPHIA

Moderate Anthracite Shipments Are Ample for Present Weather — Price Increases — Steam Sizes Lag—Bituminous Very Quiet—Prices Near Bottom —Some Quiet Contracting.

Anthracite—The expected rush of family sizes has not materialized, but even at that the city is not suffering for coal. Larger shippers are regulating their tonnage according to the weather and should conditions demand it heavy deliveries could and would be quickly made to local retailers. Coal men also admit that they do not have anything like the number of orders on their books that they did a month or two ago. The heavy amount in the cellars, and the weather has toned the trade down to almost routine.

Territory in the eastern end of the state just outside has been almost swept clean of coal for the past six weeks, and the strongest kind of complaints have been entered. One of the large companies has just commenced to relieve this section and for the next week or so they will turn almost their entire production for distribution along the line of the P. & R.

One of the biggest anthracite producers continues to adjust prices upward. This time it is a 15c. increase in the mine prices of broken and pea, broken going to $7.75 and pea to $6.40, effective Dec. 13. All the prices of this company continue to be quoted subject to change without notice.

The steam sizes are a source of trouble to most all shippers now. The independents were first to feel the softening, but now even the big companies

are finding it difficult to move buckwheat promptly.

Bituminous—The market is particularly flat at this time and cancellations are coming in right and left. The gas coals are particularly hard hit, due to the cessation of work in many mills of the iron trade. In eastern Pennsylvania out of 40 blast furnaces only 19 are now in operation. Many other industries are taking advantage of the coming holidays to close down until after the new year. Numbers of mines are shutting down, rather than cut prices any lower.

Pool 9 quotations are $4.75@$5, Pools 4 and 10, $4@$4.50, Pool 11, $3.50@$3.75, while quotations are rarely heard on Pool 18. The Fairmont coals, particularly Pool 34, are quoted $3.25 for mine run, with screened 25c. higher and slack 25c. lower. The only buyers in the market are the lightest consumers and even they are only taking in enough to tide them along.

Prices are fast approaching cost of production and rather than take a loss some producers are curtailing the output. Some of the really wise consumers are beginning to appreciate that prices are close to bottom and are pressing inquiries as to contract figures. Agreements are quietly being made on standard steam grades close to $4.50 net ton at mines, and frequently at less on some good coals.

Business at Tide is moderate, practically being confined to the highest grades, which have an established reputation overseas. There is also a fair bunkering trade which is being handled by old, established firms.

Almost all houses are experiencing quite a bit of trouble as to collections. Firms which for years past have been quick to meet their accounts are now taking a month or more beyond maturity.

NEW YORK

Anthracite Situation Easier — Demand Is Less Urgent — Independent Coals Are Lower—All Bituminous Quotations Drop — Cancellations Are Heavy.

Anthracite — Conditions continue to improve. More coal is being received and the demand is not as urgent. Requests for coal received by the Department of Health Bureau organized during the recent shortage, are gradually becoming less and unless this city should be visited by a cold wave, all danger of an extreme shortage is believed to have passed.

With production keeping up its present pace shippers look for sufficient coal to meet all requirements within a few weeks. The question of distribution is being carefully considered with the result that shipments are being sent in all directions, each of the markets getting its pro rata.

Smaller independent operators are quoting slightly below what they did a week back. Increased tonnages combined with the easier demand have aided in a further drop from the high quotations of last month.

Quotations for the product of the smaller independents ranged $11@$12, with occasional lots below $11. Concessions were made by the larger independents where the buyer was willing to include in his order some steam sizes.

Demand for steam is slow but shippers look for a stronger market with the appearance of real winter temperatures. Buckwheat moved slowly, at prices for independent coals of $4@$4.25. The company steam sizes are easy to move inasmuch as the railroads are heavy users.

Bituminous—Increased tonnages and lessened demand resulted in a further drop in quotations. With the many cancellations because of the closing down of industries, shippers find it necessary to keep moving among the trade.

Requests to cut down contract deliveries and in many instances to withhold shipments until such time as business picks up are frequently received by operators and shippers. In many instances several cars of coal were on the road between the mine and consumer and these were thrown into the spot market.

The export demand is slow except for those shippers who are fortunate enough to have made contracts. Many purchases have been cancelled because of the high prices at which they were bought and the subsequent drop in the market.

There was a wide range of quotations for mine shipment. Pools 9 and 71 ranged $4.50@$4.75; Pool 10, $3.75@$4, with the better grades bringing as high as $4.25 along the line; Pool 11, $3@$3.50; Pool 18, $3@$3.25, and Pool 34, $3.25@$3.50.

There were many loaded boats offered but they were hard to move unless concessions were made. A stray cargo of Pool 10 was said to have been offered at $8 alongside. Quotations f.o.b. piers ranged about as follows: Pool 10, $7.25@$8; Pools 9 and 71, $7.75@$8.25, and Pool 11, $7.25@$7.50.

BUFFALO

Bituminous Still Going Down—No Improvement in Demand—Mines Getting Ready to Close—Anthracite Receipts Improve.

Bituminous—Some sensationally low offers have been made by mine owners this week, though they are as a rule a part of a plan to close down operation till there is money again in the business. If anyone can make a profit out of coal mined and sold at present prices he has come to a special understanding with his miners, and this has not generally happened.

Mining has come down practically everywhere that more than the union scale has been paid, but even that is not always enough. Thin-vein Allegheny Valley operators say they cannot pay the scale and make a profit, so that if production is kept up the coal must come from the thick-vein mines, which can produce at moderate cost.

Something of what is happening may be learned by the statement of a Buffalo operator who says that at one time he was paying as high as $3.50 a ton to the miners, but that now he is down to $1.50, which is about the union scale. Some of the smaller operations paid as high as $5.50 in order to keep their men, but they are now running at very much reduced wages or not at all.

And the end is not yet. Jobbers are sending their men out to ask for business "at your own price." It is fast becoming common for mines to accept any offer that is made.

Prices are very unsteady, but most coal is selling at $5.50 for Youghiogheny gas, $4@$4.50 for Pittsburgh and No. 8 lump, $4 for Allegheny Valley and other mine run and $3.25@$3.50 for all slack.

Anthracite—As a rule all comers are getting deliveries of two or three tons and there is no sign of distress. Shippers expect more coal right along from this time, as has been the case in former seasons. The mild weather has come to the rescue wonderfully.

At the same time, inability of the companies to meet their orders is becoming more apparent every season. It shows more than anywhere else in the big premiums obtained by independent operators, who at one time secured as high as $8 over regular prices and are getting about half that now, though only a few jobbers will handle that coal at all.

Coke — Prices have sagged much faster of late and have gone comparatively lower than bituminous coal. Demand is of course much lighter than it was. Jobbers report 72-hour Connellsville foundry at $7.50, 48-hour furnace at $6.50 and off-grades and stock at $5.50, with non-standard makes 50c.@$1 less. Domestic coke is selling slowly, as is shown by breeze going as low as 75c., with beehive larger sizes at $7.50.

Northwest

MINNEAPOLIS

All Shortage Overcome by Industrial Recession and Mild Weather—Transportation Conditons Are Good—Dock Men See Prices Well Maintained Through Winter.

When abnormally mild weather lasts into the middle of December, it is bound to reduce consumption and weaken the market. That has been the case this winter. Had there been a normal season so far, the market would have been firm and would doubtless have maintained former prices on all-rail coal.

From an assured shortage of soft coal and a scant supply of anthracite, mild weather has practically made up the deficiency. Soft coal threatened to go at a premium all winter. Now it is well demoralized in the lower grades.

Screenings have accumulated and have been going at varying prices. Mine run has softened $1@$2 a ton. Prepared sizes of the better grades of Illinois coal have nearly held their own, though they are not at all firm.

The late touch of colder weather and some snow has been a reminder that the winter is but beginning. It will not take many such days to overcome the weakness of the market. In fact there was a distinct stiffening with the start of cooler temperatures.

Railroad operation has been so satisfactory that it is about forgotten that it may not be entirely cured. Yet it is a question whether the improvement is not due more to limited traffic than to any improvement either in organization or equipment.

Coal men feel confident that the winter, with anywhere near normal weather, will generally sustain former prices. The retail trade has held off from buying as long as possible, and the minute they come into the market, their needs will be sufficient to keep prices well stable.

Some apprehension has been felt that there would be some surplus of dock coal carried over into spring at a considerable loss, for the new prices will doubtless show a decline. With a shortage from a year ago of around 2,000,000 tons, it has not seemed possible for any stock to be left over. But railroad, industrial and domestic consumption have all been cut down materially from last year. A professor of engineering at the state university estimates a saving of coal of 20@25 per cent, as a result of the mild weather. When there is added to this a further reduction resulting from less industrial consumption, it can be seen that the saving from a year ago is run up greatly.

Dock men generally claim that they have their own stocks in such shape that they will go through the winter with very little left on hand by spring. Their confidence seems to be real, for some of them have moved additional coal in the last few days, at the excessive insurance rates which obtain after the close of the official period of Lake navigation. They would hardly do this on chance, if they were not sure of where the coal would go. It is assumed that they are covered by contracts, either with railroads or large industries, for the coal which has been moved during December.

MILWAUKEE

Mild Weather and Industrial Depression Checking Demand — Hard Coal Scarce and Firmly Held—Soft Coal Liable to Drop.

Mild weather has checked the demand for domestic and industries are almost out of the market. This situation applies all over the state, and rail shipments to interior points suffer in consequence. Soft coal is in good supply and lower prices will probably result if the present depression continues. Anthracite is scarce, however, and is bound to remain high throughout the winter. There is an acute shortage of buckwheat and of screened Pocahontas.

Lake navigation is at an end. The last cargo of the season reached port on Dec. 15. It originally consisted of 10,500 tons of anthracite, but only 10,200 tons were delivered, 300 tons having been thrown into Lake Michigan to release the steamer from rocks upon which she stranded. If the present temperature is held for the balance of the month all danger of a shortage will have passed.

Unrevised figures place the total receipts by bulk freighters at 868,848 tons of anthracite and 2,375,188 tons of soft coal, a falling-off in anthracite of 116,844 tons and in soft coal of 789,900 tons in comparison with 1919. There have been no developments as yet concerning the result of the coal inquiry recently prosecuted by state officials.

Inland West

CLEVELAND

Bituminous Prices Are Cut at Eastern Ohio Mines—Demand Falls Off—Pocahontas Advances—Anthracite Is Scarce.

Bituminous — Partial or complete closing down of many industrial plants, together with continued mild weather, have combined to bring about a decided dullness in the trade which has affected not only steam coal, but domestic as well.

Mine run steam is obtainable in some cases as low as $3 at the mines as compared with $3.75@$4 a week ago. Domestic lump is also somewhat easier around $4.25, with some sales made below this figure.

Retail prices of bituminous, however, have not been reduced. With continued mild weather some reductions are probable, although a severe cold spell would perhaps cause higher quotations.

Receipts are improving with a better supply of cars, estimated at about 70 per cent. A week ago the supply was little better than 50 per cent. This situation has greatly aided production.

Most of the industrial buying now being done is to meet only immediate requirements. Comparatively little coal is held by consumers in storage. Although the railroads are doing some buying, the volume of their purchases is on the whole rather small.

In the Lake trade, the last coal carrier sailed on Dec. 11 and a good clean-up has been made at the lower ports. Only about 10,000 tons were left over. Two steamers have tied up and are holding cargoes that will be forwarded at the opening of next season. Total Lake movement is now estimated at about 22,425,000 tons of cargo.

Anthracite and Pocahontas—Receipts continue considerably below requirements. Anthracite prices are unchanged, but Pocahontas grades have advanced. Mine run is practically the only grade of Pocahontas obtainable for domestic use.

Retail prices of coal delivered in Cleveland are:

Anthracite — Egg, chestnut and stove, $15.30.
Pocahontas—Shoveled lump, $12.50; mine run, $11.30.
Domestic Bituminous — West Virginia splint, $11.75; No. 8 Pittsburgh, $9.65; cannel lump, $15.
Steam coal—No. 6 and No. 8 slack, $8.85; No. 6 and No. 8 mine run, $9; No. 8 ¾-in. lump, $9.

CINCINNATI

Car Supply Improves — Consumption Declines With Warm Weather — Receipts Are Adequate.

Approach of the holiday season has slackened production, although dealers say they have a sufficient amount of fuel on hand to meet all demands. Because of warm weather the demand has fallen off to a degree.

Criticism of the industry, together with a threat of drastic legislation to meet the alleged evils of profiteering, as set forth in the recent report to the United States Senate is a charge without foundation of fact, in the opinion of Cincinnati coal dealers. There has been no profiteering in coal, dealers point out, and if the experience of the government in its control of the railroads and the regulation of the coal industry during the war can be taken as an example of its control of the situation, the taking over of the mines would not improve conditions.

Although the price of coal in Cincinnati, which at present is generally quoted at $9.50 is still high, consumers in other cities have been paying $12@$14. In fact, the retail price in Cincinnati has been lower than the wholesale mine price for other cities.

Retail quotations follow:

Bituminous lump	$9.25@10.50
Mine run	8.50@ 9.25
Smokeless lump and egg	11.25
Mine run	10.00@10.50
Anthracite egg	15.00@16.25
Coke, domestic egg	14.50@15.00

COLUMBUS

Further Break in Steam Prices — Domestic Is Still in Good Demand — Car Supply Is Adequate — Demurrage Coal Goes at Low Figures.

Prices on steam grades have declined to new low levels and in certain cases extreme quotations are made. The lack of demand is attributed largely to the slowing down of industry. Steam users have succeeded in accumulating all reserve stocks of fuel desired. The only active buying source is railroads and they are also cutting down requisitions. Public utilities have large reserves.

There is a considerable amount of demurrage coal reported, much of which is sold at ridiculously low prices. Nut, pea and slack is as low as $2 at the mines, with mine run at $2.25. But the market is not quite as low as those figures and a better tone is expected if colder weather continues.

Domestic trade is still rather active. There is now no shortage in any section

and dealers are beginning to shade prices to attract business. Hocking lump retails $7.75@$8.50 and in some cases even lower with Pomeroy lump about the same. West Virginia splints are quoted $8.50@$9, although the market is weakening. Pocahontas is scarce and prices range $10.25@$11.

Production in all Ohio fields has been quite heavy. Car supply until recently has been good, although some curtailment was reported during the latter part of the week. The Southern Ohio Coal Exchange reports output for the week ended Dec. 4 at 373,833 tons out of a capacity of 624,300 tons. Of the shortage 85,538 tons was due to car supply.

Reports from the Hocking Valley field show an output of 75@80 per cent with Pomeroy Bend, Crooksville and Cambridge about the same.

Prices at the mines of the principal coals used in central Ohio are:

Hocking lump	$4 00	$5.00
Hocking mine run	2 75	3.50
Hocking screenings	2 50 @	3.00
Pomeroy lump	4 50 @	5.00
Pomeroy mine run	3 00 @	3.75
Pomeroy screenings	2 50 @	3.00
West Virginia Splints, lump	4 75 @	5.75
West Virginia Splints, mine run	2.75 @	3.75
West Virginia Splints, screenings	2 50 @	3.25
Kentucky, lump	5.00 @	5.75
Pocahontas, lump	6 00 @	6.75

ST. LOUIS

Domestic Business at Standstill—Steam Demand Is Very Small—Prices Nearing Bottom—Mines Idle and Demoralization Threatens with Unseasonable Weather.

The local situation is an extremely aggravating one. Continued mild weather has upset all calculations and coal is absolutely a drug on the market. Domestic business is at a standstill, and many dealers hesitate to buy at the prevailing price for fear lower figures will come that will later entail a loss.

Industrial depression is still in such shape that the steam market is in a bad way, with no prospect of any betterment in the near future. Standard screenings sell as low as $1.25, with mine run $2.15, and lump and egg $3. Two days a week is considered good working time on commercial coal. Railroad mines manage to get as many as five days. Car supply is plentiful in all fields.

In the Mt. Olive district mines have been idle on account of no market, but prices have not been cut with but one exception. The price on domestic ranges $4@$4.50, with steam going on contracts principally. A good tonnage continues to move north, but practically no Standard is moving out of the St. Louis territory at all.

In the Carterville field as well as Duquoin, over-production is beginning to make itself felt and coal that has not been offered on the open market since late last winter is now easy to secure, although no mines have been reported idle on account of no market, with one or two exceptions on steam sizes. Working time on commercial coal ranges from 3½ to 4 days a week. Railroad tonnage is good. There are no labor troubles.

Water shortage still affects some mines in Williamson County. Some anthracite is moving into St. Louis proper, but no smokeless. Retail prices as published heretofore still continue, but it is probable these will break if the mild weather continues.

INDIANAPOLIS

All Prices Declining to Levels Fixed by Commission — Steam Market Is Extremely Dull—Domestic Demand Strong —Operating Conditions Are Good.

Bituminous prices continue to soften as December production promises to break all records. The miners appear to want Christmas money and labor difficulties have been reduced to a minimum with every one working at top speed.

Indiana steam demand is off, as also is the call from other states. The demand for domestic appears to have livened, due to real winter weather. For weeks the demand from domestic consumers has been dull. Also for the first time for several months retailers have begun advertising coal for sale.

Up to the present time prices have not declined from the figures fixed by the Coal Commission, but given a demand as low as during the past week and this price will be comparatively high. Industrials are curtailing their production and some have even closed because of lack of orders. Lack of shipments has reduced the needs of the steam roads and even public utilities are not using so much. However, the lack of demand from public utilities will not be felt until these utilities have built up the customary reserve for the acute winter demand.

DETROIT

Shipments Largely Confined to Contract — Revival of Domestic Buying Expected—Anthracite Receipts Slightly Improved.

Bituminous—There is little inquiry for either steam or domestic coal. Jobbers say that few of the large industrial and manufacturing plants are taking steam coal except such stock as may be coming to them under contracts. The concerns that have reserves are drawing on them for present requirements, while those having no reserve are purchasing in quantities only sufficient to meet current needs.

It is expected that a continuance of the recent more wintry temperatures will stimulate a broader demand for domestic coal, and that the dealers who have been hanging back will ten come into the market to renew their supplies. Their present stocks are not large.

Though the supply of bituminous seems adequate for present requirements there is little free coal to be found, and practically no coal on which demurrage is accruing. Under present regulations jobbers are not encouraging shipments of speculative nature, the risk of loss being too great.

The present level of prices is about as low as can be expected until there is a reduction in cost of labor. Domestic lump from West Virginia is quoted $5.75, mine run is $3.75 and slack $3@$3.50. Hocking lump is offered at about $5.25, while mine run and slack can be had for $3.25. Smokeless is still scarce, lump being around $8 and mine run $6.50.

Anthracite—Though a slight improvement in supply is reported, shipments are still small and the movement irregular. Dealers are not able to accumulate yard stocks and are still unable to assure customers of their ability to fill orders, except as shipment arrive.

CHICAGO

Chicago Market Saturated—Mild Weather Cuts Domestic Demand—Contract Shipments Being Curtailed.

Both steam and domestic markets are poor. In the first place there is but little demand on the part of the public for coal. In the second place, the weather has been abnormally mild and in the third place, a great many operators having "No Bills" at their mines have consigned their coal to Chicago, trusting to the ability of their salesmen to handle their shipments. As a result, the Chicago trade has reached the point of saturation. The representative dealer with yards in Chicago has his bins full. The public is buying in small quantities and is not interested except to ask when prices are going to decline still further.

Those operators having contracts in Chicago, have either been shut off or have been curtailed from 25 to 50 per cent on their shipments for the simple reason that retailers are having such difficulty in moving coal.

Those who are in close touch with market conditions in and about Chicago are not looking for any improvement in either steam or domestic sizes until after the holidays. These people argue that even if we have a good cold snap the dealers and manufacturers are protected with the supply of coal on hand.

MIDWEST REVIEW

Shrinkage of All Demands — Prices Touch Bottom — Some Mines Closing Down — Domestic Stocks Are Good.

The coal market in the Middle West continues to be uniformly listless with practically no activity in steam and very little in domestic coals.

Out in the country retailers are not buying in any great quantity and the interest displayed on prepared sizes is very languid. The average dealer, early in the spring, placed contracts with Franklin County operators and these dealers are now receiving 100 per cent deliveries on their contracts. Consequently they are no longer tempted to buy poorer grade coals at any price, no matter how steep concessions may be. However, the average supply on hand in the bins of the outlying country dealer is around 300 tons. It is expected that a good cold snap will lead to a great deal of activity in the domestic market.

Steam sizes prove increasingly hard to move. All sorts of concessions are being offered by short-sighted operators and jobbers. The more far-sighted coal men are closing their mines rather than sell at a considerable loss. Salesmen report that placing steam coal is not a matter of price cutting but that of finding a manufacturer who can conveniently stock a little more coal.

Some operators have shipped a large tonnage on consignment and put it up to their sales representatives to sell the coal. As a result, certain towns have been swamped and prices have been slashed down below those obtaining before the war. On a market like the present, consigning of coal to a given town is a bad practice because it means that the coal undoubtedly will have to be sold at a great sacrifice and the news consequently spreads from one buyer to another causing great depression on the whole market. Operators who produce coal suitable for steam purposes only are considering closing their mines until after the holidays.

Now that the market is depressed, the railroads are furnishing mines with a better supply of cars than at any time during the past year. Furthermore, labor is paying increased attention to the job with the result that practically no labor difficulties have been reported.

Current prices are as follows:

Southern Illinois (Franklin, Saline and Williamson Counties):	
Prepared sizes	$3.50@$5.00
Mine run	3.00@ 3.75
Screenings	2.25@ 3.00
Central Illinois (Springfield District):	
Prepared sizes	$3.25@$4.25
Mine run	2.00@ 3.00
Screenings	1.50@ 2.25
Northern Illinois:	
Prepared sizes	$4.00@$5.00
Mine run	3.25@ 3.75
Screenings (washed)	3.00@ 3.50

Indiana (Clinton and Linton, Fourth Vein):	Outside State	Inside State
Prepared sizes	$4 00@$4.75	$3.45
Mine run	3.00@ 3.50	3.20
Screenings	2.25@ 2.75	3.00

Indiana (Knox County, Fifth Vein):	Outside State	Inside State
Prepared sizes	$3.50@$5.00	$3.25
Mine run	2.00@ 3.00	3.00
Screenings	1.50@ 2.75	2.80

Pocahontas and New River:	
Prepared sizes	$6.00@$7.25
Mine run	4 50@ 5.00
Hazard and Harlan, (Southeastern Kentucky):	
Block	$6.25@$7.00

South

LOUISVILLE

Prices Break Further—Little Buying on the Declining Market—Western Kentucky Coal in Better Demand—Operators Offer to Contract.

Prices are breaking lower, and it is a hard matter to maintain the present heavy production, with no immediate demand for fuel.

Industrial concerns and public utilities are buying very lightly. Railroads are getting a little engine coal. Retailers are waiting for business to develop, as it has been one of the mildest falls on record. No one is buying except for immediate use in view of a declining market.

Jobbers are now being offered heavy tonnage, but are unable to make openings for it. Many small mines without sales organizations are having a hard time to sell at the very low prices which have to be accepted on spot markets, where it is practically a forced sale proposition.

Few contracts are being made. No advantage in a contract can be seen by the consumer, retailer or jobber, in view of the fact that contracts haven't been worth the paper they were written on in many cases during the past few months.

Prices at the mines of eastern Kentucky and West Virginia block are $5@$5.50; mine run, $4@$4.50; screenings, $2.75@$3.50. Some eastern Kentucky mine run is selling as low as $3.75. Some jobbers report that it is hard to locate much good block coal at less than $6@$7, but it is being sold every day in big lots at under $6.

There is still a fair movement of western Kentucky coal into the Louisville market, steam demand having developed which is holding nicely, while block coal with the lower freight and market costs is being sold under eastern Kentucky grades.

BIRMINGHAM

Steam Orders Confined to Small Lots—Domestic Demand Is Easier—Prices Remain Stationary — Labor Conditions Satisfactory — Some Delays from Car Shortage.

Commercial steam demand is very limited and sales are confined for the most part to small lots for stocking purposes. Railroads and utilities are taking most of the steam product, while the U. S. Steel Corporation subsidiaries and other furnace interests and coke manufacturers are stocking considerable coking coal. There is also a limited amount of bunkerage business. Altogether, production is being very well taken. The supply is sufficient to meet all needs and enable consumers to discriminate against the inferior products.

Prices have fluctuated very little, and now show evidence of stability. Quotations are as follows per net ton mines: Black Creek and Cahaba mine run $4.50 @$5.50; Carbon Hill $4@$4.50; Corona $4.50@$4.75; Big Seam $3.75@$4.25.

The domestic market is easy though there is sufficient demand to exceed the output, but as the weather continues mild retailers are not so insistent as to shipments. Daily receipts are ample to take care of current calls but no stocking is possible.

Production is being maintained above the average normal weekly output, figure for the week ended Dec. 11 being approximately 313,000 net tons, based on railroad cars loaded. Wagon mines are also producing a considerable tonnage in the aggregate. Car supply on the Frisco is good, but there has been a slight shortage on the Southern, while the L. & N. has furnished 40@50 per cent.

Southwestern

KANSAS CITY

Heavy Reserves Cut Spot Demand — Increasing Mine Idleness—Prices Are Slightly Lower.

It has been a good many years since the coal market was in so chaotic a condition and the situation today is not a recent making, but began, so far as the Southwest is concerned, early last summer. The daily press harped constantly on the shortage of coal, whereas, so far as this territory was concerned, there was no shortage, but the constant cry of "no coal" created a buyers panic, and as a result people bought right and left, paying any price that was asked and often bidding up the price. Manufacturing concerns also taking alarm bought heavily. The result is that all the storage bins and a great many of the domestic consumers are filled up and the mines will have to take idle time unless something unforeseen happens during the winter.

With the leveling down of prices during the past two weeks there has been a little steadying in the market. Domestic grades in Arkansas hold firm at $6.75; $4 for steam. Kansas domestic grades are $6; $4@$4.50 for steam. Missouri, $5.50@$6 for domestic; $3@$4.05 for steam, according to quality.

Western

DENVER

Cancellations Are Heavy—Jobbers Refuse Contract Shipments — Cars and Labor Are Plentiful.

Cancellations are heavier than for many months, and the Colorado market is the weakest it has been in years, considering the season. There is considerable feeling between some dealers and operators, and the present action of the retailers is regarded as a game of retaliation for what retailers say happened to them only four or five months ago.

Some of the smaller operators at that time ignored existing contracts with Colorado jobbers and shipped to other points where a premium was offered. The coal companies have since made new contracts with some of these concerns, and now that there is plenty of coal, the operators are facing an unprecedented string of cancelled orders at top prices which jobbers refuse to pay.

Prices remain the same, although some dealers have been on the point of cutting them for several days. Louisville lignite lump is $10.15 retail and Frederick lump $8.90, while slack is $5.30. Routt bituminous lump is $12.50 and Trinidad lump $11.50@$12, while steam is $8.05. Nut is 50c. cheaper.

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Spot Prices Show Further Decline and Are Very Irregular — Production Slightly Reduced — Small Mines Out of the Running.

The market has become still more irregular. Apparently a number of sales have been made of demurrage coal, while occasionally an operator seems to have sold for some particular reason, the price being quite out of keeping with cost of production. As such offerings do not meet the total demand, light as it may be, a considerable range of prices is presented. Then there is a wide divergence again according to quality, relatively high prices being paid for byproduct and the better grades of gas coal.

Lowest price reported on a regular sale of any size is $2.50, for Panhandle steam coal, but that is not representative of the market in general, steam coal of good quality being usually held $3.25@$3.50, though there is only very limited demand at such prices. High grade gas coal brings more. As to byproduct, there is not much doing. The upper limit of the market is indicated by a sale of particularly good byproduct from the Connellsville field at a shade under $3.95, this being regarded as the top of the market even for that grade.

The Pittsburgh Coal Co. continues its maintenance of regular prices at $3.75 for slack and mine run and $4 for screened. Spot market is quotable at approximately $3.25@$3.50 for steam mine run and $3.50@$3.75 for gas (screened) and byproduct, per net ton at mine, Pittsburgh district.

Production is curtailed somewhat by many producers, particularly in the smaller interests, while the really little mines are practically out of business.

UNIONTOWN

Coal and Coke Sharply Reduced—Prices Approaching Production Cost — Sluggish Market Conditions — First-Half Contract Basis Being Made.

Both the coal and coke markets slipped another notch during the week. Furnace coke is quotable $5@$6 and steam coal at a sharply reduced figure of $2.85@$3. Neither market shows much activity and many offerings have not been taken.

In the view of a number of prominent operators, the market price is fast approaching cost of production, and curtailment of output continues. It is expected that the last two weeks of December will be the most quiet period the industry has experienced in several years. While operators and jobbers have experienced difficulty in placing tonnage already mined, consumers are evidencing an increasing reluctance to take up the offerings. In few, if any instance, is tonnage other than for immediate needs being purchased.

There is not much concern being evidenced by any operator of importance in the region regarding the present slump in the market. It is held to be the natural result of the war-time readjustment and that a low level must be reached before business can get under way upon a normal basis.

That view of the situation is given a fair illustration in the negotiations now proceeding for first-half coke contracts. One large independent coke interest this week contracted for its 1921 output upon a basis of five tons of coke to one ton of pig iron. With the latter product now at $33 coke will be delivered at $6.60. The contract however, stipulates that $5.80 shall be the minimum price for coke which will permit pig iron to drop to $29 before the ratio of five to one is affected.

EASTERN OHIO

Heavy Production of Railroad Fuel—Car Supply Improves — Extensive Transportation Repairs—Prices Still Weakening—Demand Is Sluggish.

Production for the week ended Dec. 11 was a little above that for the preceding week, or approximately 417,300 tons, this being accounted for by a slight improvement in the car supply, which averaged around 70 per cent of requirements, although supply for commercial loading was only about 50 per cent.

A substantial improvement is not looked for immediately because of more scattered consignments since close of the Lake season. Between 40 and 50 per cent of present production continues to go to railroads for fuel and it is anticipated this percentage will shortly be increased.

Railroads are receiving requests, through the American Railroad Association, to load or send defective equipment to the owning roads in order that their extensive repair programs may be carried out during this period of recession in industrial activity.

The market continues soft, prices ranging $3.75@$4.25 for lump and $3.25@$3.75 for mine run and slack. This is quite a contrast with prices of a month ago and some operators express the opinion that bottom has about been reached. Wagon mines have generally discontinued operations because of higher production costs and the low prices that now prevail.

FAIRMONT AND PANHANDLE

Poor B. & O. Service Hampers Operations—Production Not Sufficient to Cover Contract Obligations — Prices Weaken and Cancellations Are Numerous.

FAIRMONT

Production was reduced to the very minimum during the second week of December, the B. & O. placement being far below requirements. The shortage of empties was not quite so pronounced on other roads. The small output was responsible for reduced shipments to all markets. It was not possible to meet even contract obligations.

Tidewater shipments were almost negligible, not only due to car shortage but also because of absence of demand. Western shipments also dwindled even to Ohio and Michigan, where much of the output had been

Operating Conditions, Indiana Coal Mines, November, 1920

PREPARED BY JONAS WAFFLE, SECRETARY INDIANA COAL TRADE BUREAU

Railroads on Which Mines Are Located	District	No. of Mines	Tons Produced	Full Time Capacity (Tons)	Tons Lost and Causes Therefor — Total All Causes	Car Shortage	Labor Trouble	Mine Disability
Big Four	Terre Haute	6	100,937	111,709	10,772	2,087	6,894	1,791
B. & O. S. W.	Vincennes	2	36,920	41,121	4,201	778	2,231	1,192
C. & E. I.	Clinton	26	347,579	444,327	96,748	52,673	35,495	8,580
	Sullivan[1]	18	202,628	274,578	71,950	32,636	16,181	23,133
	Total	44	550,207	718,905	168,698	85,309	51,676	31,713
C. I. & W.	Dana	1	8,033	9,426	4,393	.....	1,109	284
Cent. Ind.	Brazil	1	2,989	3,098	109	.....	109	.....
C. T. H. & S. E.	Clinton	14	255,597	327,722	72,125	44,325	19,395	8,405
	Linton[2]	27	289,740	398,260	108,520	74,700	18,123	15,697
	Total	41	545,337	725,982	180,645	119,025	37,518	24,102
E. I. & T. H.	Clay City, Petersburg	13	132,847	233,898	101,051	68,221	12,488	20,342
E. & E.	Evansville	2	12,493	13,693	1,200	.....	1,131	69
E. S. & N.	Evansville	4	23,862	35,679	11,817	3,303	4,709	3,805
Ills. Cent.	Linton	6	75,054	104,478	29,424	15,506	4,914	9,004
Monon	Linton[3]	19	210,117	336,819	126,702	60,136	18,638	47,928
P. C. C. & St. L.	Main Line[4]	20	223,346	320,626	97,280	33,295	20,932	43,053
	Vincennes[5]	20	513,156	654,499	141,343	59,931	55,753	25,659
	Total	40	736,502	975,125	238,623	93,226	76,685	68,712
Southern	Ayrshire	7	58,699	92,456	33,757	269	6,532	26,956
	Boonville[6]	7	74,650	87,821	13,171	151	11,939	1,081
	Total	14	133,349	180,277	46,928	420	18,471	28,037
Totals		193	2,568,647	3,490,210	921,563	448,011	236,573	236,979
Totals for month ending Oct. 31, 1920		198	2,542,799	3,676,751	1,133,952	790,533	155,083	188,336

[1]Includes all mines south of Terre Haute. [2]Two mines served by two railroads. [3]Four mines served by two railroads. [4]Includes all mines on St. Louis and Michigan Divisions. [5]Includes all mines on Vincennes and Division and Dugger Branch. [6]One mine served by two railroads.

going. Railroad fuel shipments alone held up fairly well. Spot business, being generally limited to Inland markets, further lowered quotations. Pool 34 ranged $3.25@$3.50 and Pool 44, $3.

NORTHERN PANHANDLE

While mines served by the Pennsylvania received a normal supply of empties, B. & O. operations averaged only about 60 per cent supply, reflecting the general car shortage throughout that system. Production for the

Much of the output went to Western markets, largely confined to contracts, as the spot demand was very light. Numerous suspensions of orders under contract by industries, particularly from steel companies, were received. No labor trouble was experienced during the week.

The spot demand was hardly noticeable and, of course, caused further price recessions. Mine run declined to $3.25, and $3.50 was quoted freely on prepared sizes. Slack was down to $3 and lower.

CONNELLSVILLE

Demurrage Coke Affects Spot Market—Coal Value Uncertain — Some Furnace Coke Contracts Made.

With an extremely light demand for spot furnace coke the market has been controlled by offerings loaded and requiring to be sold to avoid demurrage. Operators in their present mood would hardly sell coke still to be made at less than $6. Foundry coke has also declined further. Declines in the week are about $1.50 for furnace and $1 for foundry.

The furnace coke price quoted is not according to the rule operators feel should govern the market, the value of the coal when salable plus cost of coking. If, however, there is not enough coal demand to enable operators to switch from making coke to shipping coal, the coke market is likely to be in relation to net cost of preduction. It remains to be seen how the coal market will align itself, it being quite certain there will be enough demand for coke in the near future to furnish any direct support.

While furnacemen in general see little prospect of being able to operate, and hence are not interested in coke contracts at any price, some business has just been put through, in a case where the seller and two or three buyers were anxious to close transactions. The business involves enough coke to supply four or five medium sized furnaces and covers the first half of the new year. The general basis is a 5 to 1 ratio against basic pig iron at valley furnaces, so that on $30 pig iron the coke price would be $6. There is a limit below which coke could not go, also a stiffer ratio in case pig iron advances above a certain figure. On similar terms, about 15,000 tons has been sold for shipment from the middle of December to the end of January.

Of three prominent producers of foundry coke, one quotes on first-half contracts $10, another $9 and another $8.50, but none are effecting any sales. The spot market is quotable $5.50@$6 for furnace and $7@$7.50 for foundry.

The *Courier* reports production in the week ended Dec. 11 at 208,420 tons, a decrease of 9,480 tons.

CENTRAL PENNSYLVANIA

Price Decline Continues — Production Rate Is High — Tonnage Largely Confined to Contracts — Cancellations Increase.

Decline in coal prices, coupled with the car shortage, has somewhat handicapped larger operations in the Patton, Cambria County district, and has put an entire stop to the smaller producers who have no contract affiliations to tide them over the period of a sluggish market.

During the week ended Dec. 4, central Pennsylvania producers mined 1,250,000 tons, this being one of the largest weeks in the year. It is unlikely that this high production rate will continue, as orders are becoming scarcer, contract customers are reducing their requirements and the end of the price decline has apparently not yet been reached.

Pool 10 coal, which last week sold at $4.25@$4.50, is now quoted at $4, and other grades have dropped accordingly, with the better coals selling around $4.75. Dealers are able to get all they can handle and are selling, at retail, $7@$8. Prolonged mild weather is reducing the domestic demand considerably. The depression in other industrial lines has not yet had the effect of closing any representative mine operations. Car supply was somewhat improved during the past week.

Middle Western

DUQUOIN

Operating Conditions Are Good — All Prices Decline with Sluggish Market—Coal Sold with Difficulty.

The past week has seen a still further decline from the low levels of the preceding period. Production was high, the car supply was never better and things in general seem to operate in such a manner as to demoralize the industry. Some districts reported many "no bills" on hand and much trouble was experienced in finding purchasers for spot coal.

This district's market was very unsettled, with the demand light and prices correspondingly weak. Many plants in the cities are operating on short time or not at all and this slump in consumption is being keenly felt by mine operations. Production averaged around 80 per cent during the week, while many districts went as high as 90@95 per cent.

Prices, while rather unstable throughout the state, were lowest in the Standard field, screenings being offered as low as $1.50. In this district, screenings ranged $2.25@$3; mine run, $2.50 @$4.50, and lump, $3.25@$5.

WESTERN KENTUCKY

Demand Is Weaker for All Grades—Prices Decline—Car Supply Improves—Colder Weather Needed To Move Domestic Sizes.

With the European coal markets quiet, and the Lake movement over, along with a tremendously heavy production of coal throughout the country, it is no longer an easy matter to dispose of production, especially with industrial concerns operating on one wheel, and buying only in reduced quantities to meet immediate requirements. It is felt by some that after the Jan. 1 inventories things will pick up a little.

Many retailers now have fair stocks on hand, and without cold weather to force out such coal they are not buying on a declining market, figuring that with present excellent car supply, and abundant production, there will be no trouble in securing supplies as needed.

While mines in some sections, especially the smaller operations, with costly production conditions, have been forced to close down on the declining market, the situation in so far as western Kentucky is concerned has been very fair, and there are very few mines down. The car shortage has been aiding in holding down over-production.

Car supply on the L. & N. for the first ten days of December has increased to 53 per cent, while the Illinois Central is showing 72 per cent.

Quotations show lump, $5@$6; average, $6.64; mine run, $3.25@$4.50; average, $4.06; screenings, $2.45@$4; average, $3.11.

Middle Appalachian

LOW-VOLATILE FIELDS

Production Hampered With Inadequate Car Supply—Labor Conditions Are Good—Domestic Prices Weaken—Spot Demand Is Sluggish—"Hold Orders" on Contracts Are Increasing.

NEW RIVER AND GULF

New River car placement was so poor during the second week of December that operations were confined to about two days' running time. Practically all production was taken on contract requirements and there was no appreciable tonnage available for the spot market, which was extremely weak.

Some discussion of contracts covering the new coal year were heard on the basis of around $5 a ton. Spot mine run was weak at $5 and Tidewater quotations were $5.50 with little inquiry. The latter was a sharp slump from quotations of the preceding week. The domestic market was quoted at a price of $6, with a recession in the demand for even these grades, caused by the mild weather.

Mines in the Gulf region continued to experience an acute car shortage. Virginian mines worked on a half-time basis while C. & O. operations had only two days' supply. Utter lack of sufficient equipment was responsible for the C. & O. shortage. With the addi-

tion of 120-ton cars late in December, it is believed there will be a material improvement in the Virginian's car service.

Some new contract prices were heard, ranging $4.75@$5.50. With the output so curtailed little tonnage was thrown on the spot market to meet even the present light demand. Foreign business was almost entirely lacking.

Pocahontas and Tug River

Because of poor transportation facilities the N. & W. furnished not more than 60@65 per cent car supply in the Pocahontas region during the second week in December. Production was estimated at 50 per cent of capacity. Labor was very plentiful and miners from other fields were still drifting into the region.

Connections were at fault to a great extent, no cars being delivered to the N. & W. Under such conditions there was much idleness and irregularity of operation. Practically all the output was distributed to Inland points, little going to Tide even on contract.

Requests for suspension of shipments were common. Spot sales were at the very minimum, at prices of $5 for mine run and $6 for domestic. The demand was exceedingly dull.

Car shortage in the Tug River district fluctuated between 25 and 40 per cent, being somewhat more noticeable than recently. Coal produced hardly sufficed for contract shipments, so the fact that the spot market was very inactive made no appreciable difference in working time.

As in other fields suspension requests on contracts were common. A recession of prices marked the extremely light spot demand with mine run $5, domestic $6. Tidewater shipments were greatly reduced due to the entire absence of foreign demand.

HIGH-VOLATILE FIELDS

C. & O. Shortage Continues—Thacker Operations Are Gaining — All Prices Are Weaker—Export Market Very Inactive—Cancellations Are Numerous.

Kanawha

Taking the week ended Dec. 11 as a whole, mines were hardly able to work more than two days owing to poor car service conditions. This was attributed mainly to the inability of the C. & O. to secure empties from connections and to provide adequate transportation service. K. & M. car supply was better although this also dropped during the latter part of the week.

While Eastern shipments, including seaboard, were permitted for coal originating on the C. & O., shipments originating on the K. & M. could not be sent East over the C. & O., owing to embargo. Cars were so few that the inability to ship on contract resulted in some cancellations, aside from those due to the desire of customers to reduce fuel receipts at this time. Most of the production was consigned to Western markets, not more than 25 per cent moving eastward.

Prices continued on the down-grade, mine run being $3.50 and even lower, while prepared sizes were firm at $5@$6. Tidewater coal was quoted $4.50 with but few takers.

Logan and Thacker

Slightly increased production in the Logan field marked the second week of December, however, the supply of cars was still poor, enabling only a 50 per cent run. Shipments to Eastern Inland markets were somewhat improved, as there was no longer any bar to such a movement, yet the bulk was going to Western centers. Eastern spot demand was entirely inactive and even the Western call was quiet, bringing prices down to $3.50 a ton. Prepared coal was in a little better demand at about $6. Slack coal was a drug on the market.

Contracts were affected by the general business conditions, customers endeavoring to limit shipments below those fixed in their contracts. No spot coal was going to Tide for export, as the foreign market was extremely quiet.

All but about six mines in the entire Williamson field were producing coal at the end of the second week in December and the output had grown to about 100,000 tons per week, with strike and labor shortage losses being reduced. In fact, strike losses were just about 25,000 tons. Many men are being brought into field and the resumption of operation is general.

Of course, most producers are back on their contracts and for this reason the weakened spot demand is having no effect. What little tonnage is moving on the open market averages $3.50 a ton for mine run and $6 for domestic.

Virginia

While production was limited by a car supply enabling a run of only 70 per cent, this was a slight improvement as compared with the preceding week. In contrast to conditions in neighboring fields, both export and inland demand was good, mine run being quoted at an average of $4.

All tipple mines are running to the limit of cars placed and only the smaller operations have been obliged to shut down because of low prices. In view of the lightening of freight traffic the continued car shortage is attributed to the general use of open tops for all shipping purposes and the fact that this equipment is not equal even to the needs of the coal mines.

Northeast Kentucky

Production increased slightly during the second week in December, the loss from car shortage being placed at 32 per cent as against 47 per cent during the preceding week. The improvement was more apparent on the L. & N. than on the C. & O.

The dull spot demand was more pronounced, mild weather cutting down the call even for prepared sizes, which had been running strong. Nut and slack was a drug on the market at $2.25@$2.50 and mine run slumped to $3@$4, while lump ranged $5@$5.50.

Many cancellations of contracts are being received and this, of course, is throwing a larger tonnage on the already weakened spot market. Domestic consumers are now buying only for immediate needs.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Rail Congestion Hampers Production—Demand for All Grades Is Dull—Prices Are Lower.

Car supply last week was poor due to heavy congestion on the L. & N. Much delay was experienced in furnishing empties and pulling loads, the first of the week finding many mines without cars.

Demand for all grades is dull, some steam mine run selling $3.75 a ton and even lower. Gas coals generally are 50c. higher. Many cancellations are being received and customers are endeavoring to cut down shipments called for on contracts or else attempting to cancel contracts outright.

With the mild weather that has prevailed, the domestic demand is easing off, although not many mines in this field are shipping domestic sizes, not being equipped to screen their coal. Labor is working smoothly and no serious shortages are apparent.

Western

UTAH

Operating Conditions Are Good—Buyers Are Not Actively in the Market—Domestic Call Suffers With Unseasonable Weather.

As a result of the better car supply and the mild weather, operators have caught up on their orders and are now finding business rather dull. The tendency to lower prices in all lines just now is partly responsible for this new condition.

Large consumers are not buying any more coal than they need for immediate use, as they feel prices may come down for coal as well as other things. The coal men point out that this commodity can hardly be reduced with the present scale of wages that are being paid. Retailers report subnormal demand. The labor situation is excellent, with no losses reported from this source.

It has been reported to the I. C. C. by carriers in the state that failure of the Utah Commission to advance passenger and freight rates in intrastate commerce to recently authorized levels of interstate traffic, allowed by the I. C. C. has already cost the Utah roads $2,000,000.

MINE And COMPANY NEWS

ILLINOIS

The rapid progress which is now being made toward the completion of mine No. 2 of the **Jewel Coal & Mining Co.**, near Du Quoin, indicates that coal will be shipped from the new mine by Jan. 1 or sooner. Machinery and equipment of all kinds is being rushed to the mine and will be installed as soon as it arrives. The company has offices in Chicago, St. Louis and other large cities.

The **Security Coal & Mining Co.** has just finished a series of test holes drilled about 3 miles west of their present operating property. The work was done by the Sullivan Machinery Co., of Chicago. The drillers moved from that place to a tract of land north of Centralia where they will drill several holes.

Plans are now being completed for the new mine to be sunk near Gillespie, Macoupin county, by the **West Virginia Coal Co.**, of St. Louis. The mine will employ over 500 men and will be one of the largest in that section of the state.

Mine No. 8 of the **Peabody Coal Co.**, located at Tovey, was idle lately resulting from a fire in the workings of the mine. The flames did not do so much damage but the smoke was very hard to fight, being in such a position that it could not be avoided, therefore the men could not enter the shaft to work. When the fire was completely extinguished the mine resumed operations.

Ten men employed by the **Mount Olive & Staunton Coal Co.**, at Staunton, Mine No. 2, recently narrowly escaped death when the cage in which they were being lowered into the mine gave way and dropped 35 feet to the bottom of the shaft. All of the men were seriously hurt but it is not expected that any of them will lose their lives.

INDIANA

Several Terre Haute attorneys are interested in a new coal mining company which was formed recently in Terre Haute. The company will be known as the **General Fuel Corporation** and its capital stock is placed at $1,000,000. The directors are W. T. Douthitt, C. A. Crawford, W. T. Tichenor, R. E. Llewellyn and J. H. Beasley.

Articles of incorporation recently were filed by the **Newport Coal Mining Co.**, of Newport, Ind. The capital stock is placed at $300,000 and the directors are Henry A. Cross, Raymond L. Wilhelm and Barton S. Aikman.

Fire in the Willow Creek coal mine south of Seelyville, recently, destroyed the barns and burned fifteen mules and two horses to death. The night watchman at the mine discovered the fire, the origin of which has not been determined. The property is owned by the **Richards & Sons Coal Co.**

The Simplex Coal Co. recently organized in Petersburg, by Earl Fields, Harry Weeks and Harry Patricks, Minneapolis capitalists, will take possession of the No. 3 Atlas Mine, now owned by the **Pike County Coal Co.**, situated one mile north of this city on the White river, as soon as the mine is ready for operation. The deal involves the expenditure of $250,000 as the No. 3 Atlas is being equipped to handle 4,000 tons daily, and will be one of the most modern in southern Indiana, electricity being used as the motive power.

Work has been started by a large force of men **on a new railroad** being built from the line of the Southern R.R., one mile east of Oakland City, Ind., to the big coal fields in that county, east of the town of Spurgeon, and which road may ultimately connect with the Southern Ry. at a point in Warrick county near the town of Selvin. The new railway will follow the survey of the South Fork ditch for a distance of five miles and then will extend into the hills east of Spurgeon, connecting with a rich stripping coal territory, which has remained undeveloped because of the lack of railroad facilities.

KENTUCKY

Coal mining operations by West Virginia capitalists will be established in Kentucky by the **Elkhorn Gas Coal Co.** The company will operate in Floyd County. The capital stock is $100,000. The incorporators are: R. A. Crockett, H. W. Crockett, E. S. Crockett, I. V. Sizer of Bluefield, W. Va., and J. S. Gillespie of Graham, Va. Offices will be established at Bluefield

Organization of the **Old House Coal Co.** with capital stock of $50,000 has been announced in the Hazard field. The incorporators included A. M. Goss, V. H. Fuller and Joseph Campbell.

Nothing further is expected of the movement to call a special session of the Kentucky Legislature to place a **tonnage tax on coal**, at least not for the present. S. Thruston Ballard, Lieutenant Governor of Kentucky, who has been backing the movement, has gone to Florida for a month. He will return in January and may take up the argument after that time.

Representing business interests of Tennessee and Alabama, **Robert C. Mason** of New York was in Louisville recently to discuss with local concerns the purchase of 100,000 acres of coal land in eastern Kentucky.

MONTANA

The Bull Mountain coal field, in Musselshell County, Mont., according to an estimate made by the United States Geological Survey, contains nearly five billion tons of coal. A small part of this immense reserve of coal has already been mined, but by comparison with the total in the ground, the quantity mined is practically negligible. This coal field is described in a bulletin of the Geological Survey.

OHIO

A number of coal concerns were chartered under Ohio laws recently, many of which are producing concerns. Among the number are: **The Sahara Fuel Co.**, Nelsonville, capital, $35,000, incorporators C. W. Juniper, L. E. Juniper, G. M. Tolliver, E. S. Tolliver, D. C. Allen; **The Bidwell Coal Co.**, Steubenville, capital, $50,000, incorporators, J. D. Gardner, C. K. Welch, S. Merryman, J. K. Biddle and V. Biddle. **The McVicker Coal & Coke Co.**, Cleveland, capital, $50,000, incorporators, Mark A. Copeland, N. B. Madden, C. A. Quintrell. M. E. Getchell and O. E. Schultz. **The Vogel Coal & Supply Co.**, Columbus, capital, $25,000, incorporators, P. A. Vogel, T. S. Crockett, E. W. Overbey, S. E. Crockett and W. C. Vogel.

The announcement is made by the **Sunday Creek Coal Co.** that all of the interests in the company, formerly held by John H. Winder, the former president, has been acquired by J. S. Jones, chairman of the board of directors as a result of negotiations which have been going on for several months. At the same time the Jones interests in the F. C. Stedman Co., a store concern with headquarters at Athens, has been disposed of, being acquired by John H. Winder. Mr. Winder resigned as president of the company, being succeeded by Harry B. Arnold. The present board of the Sunday Creek Coal Co. consists of J. S. Jones, Harry B. Arnold, George K. Smith and C. C. Cook. The deal was the result of the litigation started more than a year ago by Mr. Winder for a distribution of his stock and an accounting. Mr. Winder was defeated in the action. The Sunday Creek Coal Co. will be engaged in the coal business exclusively as it will not operate any stores.

The Troll Coal Mining Co., with offices at St. Clairsville, has been authorized by the Secretary of State to increase its capital from $360,000 to $600,000.

PENNSYLVANIA

Andrew Schlossnagle of Johnstown has just closed a deal by which he purchased for eastern capitalists the **Collier Coal tract** near Addison, Somerset county, the purchase price not being given out. It is said that hundreds of acres in the same locality have been optioned and that some of the prices are said to run very close to $300 per acre.

R. W. Playford, of Uniontown, has purchased 1,000 acres of the Sewickley vein of coal in Fayette county from **Taylor N. Dawson.** Announcement of the sale contained the news that it is the intention of Mr. Playford and his associates to make this and their adjoining properties one of the greatest coal producing properties in the county.

G. Corrado, of Connellsville, has added 200 additional acres of coal land to his interests at Shinnston, W. Va. A mine will be opened immediately. The new property is located about 20 miles from Fairmont.

The East Lehigh Colliery Company, Tamaqua, anthracite operators, announce that they expect to be out of the coal business within the next month or two.

The Navy Smokeless Coal Co., has completed the erection of twenty houses at Carrolltown, Cambria County. The buildings have all been well finished throughout and will be used to house the miners.

Fire of unknown origin, starting in the engine rooms of the structure recently, totally destroyed the Raymond breaker, located at Eynon and owned by the **Scranton Coal Co.** The loss is estimated at $250,000. About 800 men and boys are thrown out of employment through the fire.

UTAH

A plan for generating energy at Utah coal mines and transmitting it to Salt Lake City, thus saving the expense of freight charges for coal, is being considered by a group of Eastern capitalists. Whether the purpose is to supply light, heat or power was not announced. It was stated that energy equivalent to that produced by a ton of coal could be supplied by the new plan at a cost comparing favorably to pre-war prices. Men behind the project have been looking for a suitable site for putting up their plant for some time and Salt Lake City has now been decided upon. If the coal to be used is that mined in Carbon county, which would seem highly probable, the energy referred to would travel a distance of 120 miles.

WEST VIRGINIA

In addition to operating on a large scale in McDowell county, W. Va., the **United States Coal & Coke Co.**, controlled by the United States Steel Corporation, will also operate mines in northern West Verginia, having acquired a few months ago a tract of about 5,000 acres in the Barbour County field upon which development work has begun. As fast as material is received preliminary development will proceed, with J. D. Jennings, construction engineer, directing construction work.

No change except in the presidency has been made in the seven producing concerns in this section of West Virginia as a result of the death of the late William Leckie, who headed the companies in question. His son, Andrew F. Leckie has been selected to head all of the companies and their work will go forward as usual. The companies of which Colonel William Leckie was president are the **Panther Coal Co., the Lathrop Coal Co., the Leckie Fire Creek Coal Co., the Leckie Collieries Co. ,The Leckie Smokeless Coal Co., the Douglass Coal Co.**, and the **West Virginia Pocatontas Coal Co.**

One of the largest companies recently formed in northern West Virginia is the **Brady Coal Corporation**, Fairmont, which is capitalized at $2,000,000 and will undertake the development of a large tract near Monon in Monongalia County recently acquired by Mr. Brady and his associates

Increase in capitalization of the companies enumerated below has been authorized by the Secretary of State of West Virginia:

Lory Coal & Coke Co., Charleston, W. A. Markel, president, from $50,000 to $100,000.

Pigeon Creek Coal Co., Huntington, W. Va., H. H. Morris, president, from $300,000 to $500,000.

Pond Fork & Bald Knob Railroad Co., Huntington, W. Va., C. W. Campbell, president, from $50,000 to $100,000.

Miller Pocahontas Coal Co., Huntington, W. Va., W. E. Deegans, president, from $500,000 to $525,000.

Paragon Colliery Co., Huntington, W. Va., W. E. Deegans, president, from $100,000 to $500,000.

Cub Fork Coal Co., Huntington, W. Va., W. E. Deegans, president, from $25,000 to $150,000.

Knox Creek Coal Co., Williamson, W. Va., S. H. Goodloe, Jr., president, from $25,000 to $200,000.

Tropf Coal Co., Morgantown, W. Va., Fred Tropf, president, from $200,000 to $300,000.

Elmo Mining Co., Charleston, Richard M. Lambert, president, from $50,000 to $300,000.

Marshall Fuel Corporation, Pittsburgh, Pa., J. E. Stewart, vice president, from $5,000 to $5,000,000.

R. & P. Coal Co., Fairmont, W. Va., John F. Phillips, president, from $500,000 to $750,000.

Stony River Coal Co., Philadelphia, Pa., William B. Ways, president, from $5,000 to $10,000.

New Pocahontas Coal Co., Huntington, W. Va., W. E. Deegans, president, from $100,000 to $500,000.

Elkhorn-Hazard Coal Co., Bluefield, W. Va., Lester G. Toney, president, from $75,000 to $150,000.

Davenport Coal Co., Buffalo, N. Y., George J. Brendel, president, from $300,000 to $400,000.

Capitalized at $200,000, **The Commercial Fuel Co.**, Morgantown, has been organized by Morgantown people and will probably develop a tract of coal in Monongalia county and will engage generally in the business of handling coal. Closely identified with the new company are: Claude Scott, W. E. Arnett, E. D. Trumlin, G. C. Casto and Forrest O. Shriver, all of Morgantown, W. Va.

The West Virginia Department of Mines is taking a good deal of pride in the fact that the number of fatal accidents in West Virginia mines during the fiscal year ending June 30, 1920 was reduced to the extent of 57, there being just 320 casualties during the year. That means on a general average the number of fatalities during each month was less than 30. That was actually true as to the latter part of the fiscal year. The year started off with a higher rate of mortality, there being 46 deaths in July and 36 in August. During the remaining ten months the number of deaths was as follows: September, 32; October, 25; November, 15; December, 23; January, 31; February, 22; March, 24; April, 21; May, 21; June, 24.

With a view to using river transportation to a greater extent in the future than in the past, the **Richland Coal Co.**, Wheeling, has under construction both at its Warwood and its Moundsville plant river tipples which are being erected at a cost of between $500,000 and $1,000,000. Owing to the uncertainty of rail transportation the management of the company feels it can materially increase the volume of its shipments through the use of water transportation. The company already owns three tow boats and barges so that it is fully prepared to handle water shipments.

A half-million dollar coal corporation which will be known as the **Kana-Clay Coal Mining Corporation** will operate probably in both Clay and Kanawha counties. Charleston capitalists are behind the new concern largely, among them being F. M. Stambaugh, M. C. Edmunds, M. D. Jennings, I. S. Adams and L. S. Echols, the last named being a member of Congress from this district.

Operations on a very extensive scale will be carried on by the **Spia Coal Co.**, Welch, organized with a capitalization of $500,000. New York capitalists are financing the proposition, among those most interested in the organization of the new concern being Crittenden H. Adams, W. Arthur Howell, Percy Mulock, Winifred K. Pettigrue and Sanford D. Stockton, Jr.

The Whitaker-Glesner Co., Wheeling, one of the large steel companies of this section figured in a deal of considerable magnitude in November, becoming the purchaser of 12,000 acres of coal land in Mason county, the consideration being $400,000, it is understood. The acreage secured has a frontage of about 6 miles on the Ohio River.

Grant District of Monongalia county is to have a large coal operation. W. E. Arnett and others have consummated a deal for the coal holdings of the **American Gas Coal Company** and the **American Gas Railway Co.**, there being about 300 acres of Pittsburgh coal involved in the deal, this coal being near Flaggy Meadow. The sum involved in the deal is in the neighborhood of $500,000. Associated with Mr. Arnett in this project are: W. A. Ream, J. E. Vincent, F. O. Shriver, W. C. Miller, J. A. Blaney, G. W. Davis, William E. Glasscock, Jr. and Grover C. Casto.

The Champion Collieries Co., Clarksburg, which represents a recent consolidation of the **Thermal Coal Co.** and the **Coal Ridge Mining Co.** of Cambridge and Cleveland, Ohio, has added to its holdings to the extent of 500 acres in the Lost Creek and Rooting Creek sections of Harrison county. The additional territory was purchased from the **Eastern Utilities Co.** at a cost of $143,104.50. The Champion Collieries has a total capitalization of $1,000,000.

Employing 225 men, the plant of the **Domestic Coke Corporation**, Fairmont, installed at a cost of $4,000,000, is at last in full operation, the first manufactured coke having been removed on Dec. 2. The company was confronted with many perplexing delays before being able to operate, owing to inability to secure cars and coal.

Arrangements are being perfected by the **Chaplin Collieries Co.**, Morgantown, to increase the output of its plants on Scott's Run by at least 100 per cent. Additional openings are to be made at both the Louise No. 1 and Louise No. 2 mines. Even under present conditions the company is producing coal at the rate of 1,500 tons a day.

As the **Pennsylvania-West Virginia Coal Co.**, Gassaway, has taken over four mines on the Charleston division of the Baltimore & Ohio at Gilmer, a number of improvements are being made by the company in order to get a larger production.

Development of coal land in Washington district of Boone County will follow the organization of the **Coal River Fuel Co.** by Charleston capitalists, this company having a capitalization of $75,000. Among those actively interested in the new concern are G. A. McQueen, Ray H. Evans, A. W. Taylor, S. B. Chilton and L. H. Oakes, all of Charleston, W. Va.

Traffic News

Hearing before the **Public Utilities Commission of Ohio** was held in Columbus on December 3d, when consumers, retailers and producers expected to protest against the proposed increases in intrastate coal rates, in excess of 40 per cent, tariffs covering which had been published and filed by the carriers to become effective Nov. 18 but suspended by the commission. Traffic Commissioners of various Chambers of Commerce were present to enter their protests against these increases. However, the entire day was consumed by the railroads in stating their position in consequence of which the commission continued the hearing until Jan. 4.

The application of the **Utah Terminal Ry. Co.**, which is owned by three of the large coal companies of the state, for permission to construct a railroad up Spring Canyon to serve their mines in interstate traffic, is being heard by the Public Utilities Commission of Utah. The Utah commission has already permitted the construction of the line but only for intrastate traffic. The Interstate Commerce Commission asked the Utah commission to conduct the hearing for it.

The Interstate Commerce Commission has denied, effective March 1, next the application of the Illinois Central and other railroads for authority to continue rates on bituminous coal, bituminous coal briquettes, anthracite coal and coke from mines in Illinois, Indiana, and Kentucky to points in Illinois, Indiana, Missouri, Iowa, South Dakota, Nebraska and Minnesota without observing the long and short haul clause.

In the complaint of the **Weir Smelting Co. vs.** the Director-General, an examiner of the commission in a tentative report recommends that the rates on slack coal from Deering, Kan., to Caney, Kan., be declared unreasonable and violative of the long and short haul clause, and that reparation be awarded the complainant.

Combination rates on coal from Illinois, Indiana and eastern Kentucky mines to points in Illinois and Wisconsin, which were subject to the so-called double advances, were found not to be unreasonable or unjustly discriminatory in a report of the Attorney Examiner filed with the Interstate Commerce Commission in the case of the Wilbur company against the Director General and the Pittsburgh, Cincinnati, Chicago and St. Louis R.R.

The I. C. C. has permitted the Jonesboro Freight Bureau to intervene in the case of the West Kentucky Coal Bureau vs. the Illinois Central R.R.

The Washington Steel and Ordnance Co. has filed a petition with the Commission requesting refund of $2,771 due to overcharges on bituminous coal shipped from West Virginia to Uniontown, D. C., and also that it not be required to pay back $1,126 to the Railroad Administration which had been refunded to the steel company due to overcharge.

In the case of the **Chicago Coal Merchants Assn. vs. the Director General**, a tentative report of an I. C. C. examiner recommends that the charging of rates on coal and coke from various producing regions to the Chicago switching district, higher to some deliveries than to Chicago itself, is not unreasonable or unduly prejudicial, but that rates to points just beyond the Chicago district based on the Chicago combinations are unduly prejudicial.

In the case of the **Harlan County Coal Operators' Association**, an examiner of the Interstate Commerce Commission has submitted a tentative report recommending that the Commission find that the rate on Lake cargo coal from complainant's mines on the Louisville & Nashville R.R. in eastern Kentucky and Tennessee to Toledo, Ohio, has been since May 6, 1920, is, and will be, unjust and unreasonable and unduly prejudicial to the extent it has exceeded, exceeds or will exceed the rate contemporaneously maintained from mines on the Chesapeake & Ohio, Sandy Valley & Elkhorn and Long Fork railroads in West Virginia and eastern Kentucky, known as the Kanawha field. Reparation is recommended to be awarded the complainants.

In a complaint to the Commission the **Benton Coal Mining Co.** of Benton, Ill., alleges that the Chicago, Burlington & Quincy R.R. gives undue preference and advantage to coal mines at Logan and Royalton in Illinois in the matter of car service. An order is requested extending the car service to complainant's mines at Benton and the same rates as are accorded to other mines in the same rate group.

Nine coal companies in the Routt County fields have petitioned the **Colorado Public Utilities Commission** to continue the recently installed tri-weekly passenger service over the Moffat R.R., declaring that passenger curtailment affords greater transportation service. The tri-weekly passenger service has brought a storm of protests. The companies signing the petition are the Moffat, Hayden Brothers, International, Elk Creek, Colorado-Utah, McNeill, Bear River, Victor-American and the Routt-Pinnacle Coal companies.

The Ohio Utilities Commission has started hearings on the application of railroads on the suspended coal rate schedule, which was filed with the commission several months ago. Many of the rates are in excess of the 40 per cent advance allowed by the Interstate Commerce Commission and as a result they were suspended. In case the decision of the commission is against the railroads the question will be taken to the Interstate Commerce Commission.

Industrial News

Indianapolis, Ind. — The Automatic Reclosing Circuit Breaker Co. announces the appointment of W. D. Hamer Co., 508 Traction Terminal Bldg., as its representative in the State of Indiana and western Kentucky.

Wilkes-Barre, Pa.—Wade M. Reed, formerly chief engineer, Dodson Institute, lately assistant to R. V. Norris, announces the opening of offices in the Odd Fellows Building, South Franklin Street, to engage in a general consulting practice of mining engnieering. Special attention will be given examinations and report on mining properties.

New York, N. Y.—The Eyre Fuel Co. and Andrade-Eyre Inc. have moved from their present location, 80 Broadway, to their new quarters, 300 Madison Ave., corner 41st St., where they have leased the entire fifteenth floor. Their new telephone number is Vanderbilt 9000-1, 2, 3, 4.

Pittsburgh, Pa.—Chas. T. Topping, formerly of the Chas. T. Topping Machinery Co., Pittsburgh, dealers in contractors' equipment, has re-established his organization in the House Bldg., Pittsburgh, and will act as district sales representative for the Austin Machinery Corporation, Chicago, manufacturers of concrete mixing, excavating, road building and material handling machinery and equipment.

Association Activities

Smokeless Coal Operators' Association of West Virginia

No meeting of the board of directors of the association was held in connection with the November session of the association at New York, but much business was transacted at the general meeting of the Association. While no formal action was taken, the question of bunkering vessels in the stream was one which absorbed the attention of members.

It being proposed to increase the charges on lightering at Hampton Roads, the association recorded itself as being against such proposed increases and placed in the hands of the Secretary the protest of the association to be filed.

Another subject under discussion was that relating to the imposing of a differential in connection with the rate on Pocahontas coal to Cincinnati, the differential being 45c. a ton. While for a time it had appeared that trimming charges were to be made at Hampton roads, yet the Secretary informed the members that he had succeded in securing a suspension of such charges.

A report was to have been received from the committee known as the Emergency Committee for the Panama Canal but owing to the absence of several members of the committee the report was not submitted, Mr. Caperton of the New River field reporting however that insofar as the New River field was concerned nothing had been done.

Winding Gulf Operators' Association

The association is urging on its members the importance of loading more coal per car and of loading or unloading, as the case may be, every car in 24 hours, it being pointed out that if all car users in the United States will add two tons to the load of each car and will load or unload promptly it will add 535,000 freight cars to the present supply. In its campaign to increase loadings per car of operators in its district the Winding Gulf Association has printed a list of companies loading on an average from 41 to 60 tons.

Only one company succeeded in averaging 60 tons per car during August; four companies, 59 tons per car; four companies, 58 tons per car; eight companies, 57 tons per car; 15 companies, 56 tons per car; 11 companies, 55 tons per car; 19 companies, 54 tons per car; 14 companies, 53 tons per car; eight companies, 52 tons per car; five companies, 51 tons per car; two companies, 50 tons per car; one company, 49 tons per car; one company, 41 tons per car.

At the Bellevue-Stratford, Philadelphia, at which officers were elected for the year, the executive committee met recently, the general meeting commencing shortly after. At the conclusion of the general meeting a banquet was held at 6 o'clock in the evening.

Recent Patents

Coke-Handling Apparatus.—Wm. F. Rust, Pittsburgh, Pa., assignor to The Koppers Co., Pittsburgh, Pa., 1,351,541. Aug. 31, 1920. Filed Oct. 4, 1919. Serial No. 328,571.

Coal-Handling Machine. — Edwin N. Weaver, Jersey City, N. J., 1,351,593. Aug. 31, 1920. Filed May 24, 1919. Serial No. 299,596.

Coal Crusher: Myron A. Kendall, Aurora, Ill., assignor to Stephens-Adamson Mfg. Co., Aurora, Ill., 1,352,609. Sept. 14, 1920. Filed April 19, 1920. Serial No. 375,019.

Miner's Electric Lamp. Theodore Stretton, Cardiff, Wales, and John W. Jones, Cannock, England, assignors to Haslam & Stretton Ltd., Cardiff, Wales, 1,352,636. Sept. 14, 1920. Filed Aug. 11, 1919. Serial No. 316,793.

Mine Haul. Herbert V. Brown, Cherry Tree, Pa., 1,352,653. Sept. 14, 1920. Filed Nov. 12, 1919. Serial No. 337,448.

Mining Machine. N. D. Levin, Columbus, Ohio, assignor to the Jeffrey Mfg. Co., Columbus, Ohio, 1,353,054. Sept. 14, 1920. Filed Feb. 12, 1914. Serial No. 818,314. Renewed Jan. 3, 1920. Serial No. 349,350.

Self-Loading Coal and Grain Truck. John A. Klovstad, Hope, N. D., 1,353,247. Sept. 21, 1920. Filed Jan. 10, 1920. Serial No. 350,623.

Apparatus for Supplying Powdered Fuel to Furnaces. Edmund H. Stroud, Chicago, Ill., 1,353,291. Sept. 21, 1920. Filed Feb. 26, 1917. Serial No. 150,911.

Grease Cup. Edmund Nolan, Detroit, Mich., 1,353,607. Sept. 21, 1920. Filed Mar. 11, 1920. Serial No. 364,923.

Automatic Mine Door. Charles L. Bowman, Canton, Ohio, and John J. Body, Dante, Va., assignors to the American Mine Door Co., Canton, Ohio, 1,353,715. Sept. 21, 1920. Filed July 8, 1918. Serial No. 243,931.

Latch for Doors of Mine Cars. Charles E. Kelley and Gustave D. Speicher, Larksville Borough, Pa., 1,353,760. Sept. 21, 1920. Filed Dec. 17, 1919. Serial No. 345,607.

Apparatus for Storing Coal and Other Materials. Francis Lee Stuart, Washington, D. C., assignor to International Conveyor Corp., New York City, N. Y., 1,354,226. Sept. 28, 1920. Filed Mar. 19, 1918. Serial No. 223,302.

Mining Machine. Robert H. Jeffrey, Columbus, Ohio, assignor to The Jeffrey Manufacturing Co., Columbus, Ohio, 1,354,831. Oct. 5, 1920. Filed May 1, 1914. Serial No. 835,757. Renewed Dec. 28, 1919. Serial No. 268,702.

Mining Drill. Carl Biernat, Glasford, Ill., 1,354,944. Oct. 5, 1920. Filed May 8, 1920. Serial No. 379,824.

Miner's Lamp Kit. James A. Schooling, Frankfort, Ind., 1,355,007. Oct. 5, 1920. Filed Jan. 15, 1920. Serial No. 351,658.

Spiral Separator. Frank Pardee, Hazleton, Pa., 1,356,464. Oct. 19, 1920. Filed June 10, 1915. Serial No. 33,387.

Coal Cager. E. E. Nida, Millfield, Ohio, 1,355,414. Oct. 12, 1920. Filed July 6, 1920. Serial No. 394,025.

Method and Means for Feeding Powdered Fuel. Wm. M. Baxter, Chicago, Ill., assignor to M. W. Arrowood, Chicago, Ill., 1,355,444. Oct. 12, 1920. Filed Apr. 27, 1918. Serial No. 231,070. Renewed Dec. 24, 1919. Serial No. 347,200.

Apparatus for Handling Coal. Hohson S. Shimizu, Chicago, Ill., assignor to Roberts & Schaefer Co., Chicago, Ill., 1,355,512. Oct. 12, 1920. Filed Sept. 17, 1918. Serial No. 254,405.

(U. S. patent specifications may be obtained from the Patent Office, Washington, D. C. at 10c. each.)

Personals

General James B. Coryell announces his association with the Fuel Corporation of America, located in Philadelphia, Pa.

J. R. Fleming, associate in mining research at the University of Illinois, is spending ten days in the mining fields of Southern Illinois, making a special investigation of underground mine haulage.

H. L. Smith, who was employed with the Vandalia Coal Company of Sullivan, Ind., and who recently returned from a year in Jugo-Slavia, where he was a member of the technical mission, under the direction of Herbert Hoover, has accepted a position with the United States Bureau of Mines. He will work in New Mexico and Colorado, with headquarters at Denver.

Frank Pardoe, general superintendent for the Penn-Mary Coal Co. at Heilwood, Pa., has resigned and will become general manager of the Estep Brothers' Coal Mining Co. and the Cambria and Indiana County Realty Co. with headquarters at Starford, Pa.

H. T. Booker has been appointed mining manager of the Berwind-White Coal Mining Co.'s operations at Windber. He succeeds the late J. D. Simpson, who died last February. Since the death of Mr. Simpson this office has been vacant.

Douglas Barnes Corporation, New York, announces the appointment of **S. Ross Yancey** as foreign sales manager.

George H. Bayne was recently appointed inspector-in-chief of the Tidewater Coal Exchange, Inc., with offices in the Grand Central Palace, New York City. He will have direct charge of the Inspection Department, including field inspectors and all matters pertaining to classification of mines.

Obituary

J. B. Carrington, president of the Woodstock Operating Corporation and also president of the Ajax Foundry Company, died at his home in Anniston from an acute attack of Bright's disease recently. Mr. Carrington was a widely known furnaceman and coal operator, coming to the Birmingham district from Richmond, Va. in 1886 and was associated with the Virginia and Alabama Coal Co., and was later on successively superintendent of the Walker County coal mines of the Sloss-Sheffield Steel & Iron Company and the mines of the Tennessee Coal, Iron & R. R. Company in the Blue Creek field.

Edw. V. Smith, division superintendent, Baltimore & Ohio R.R., Wheeling Division, died Dec. 7, following a surgical operation. Mr. Smith had been in the service of the B. & O. for the past twenty-five years and during the past three years was superintendent of the Wheeling Division. He had many friends among coal operators and shippers.

Thomas V. Patterson, president of the Scranton and Lehigh Coal Co. of Brooklyn, N. Y., died at his home in that city recently, after an illness of less than 24 hours. Mr. Patterson was born in 1873 and engaged in the coal business with his father, Thomas J. Patterson, who organized and was the first president of the Scranton and Lehigh Coal Co.

Coming Meetings

The **Northeast Kentucky Branch** of the **Kentucky Coal Mining Institute** will hold a meeting Jan. 7, 1921, at Pikeville, Ky.

National Retail Coal Merchants' Association. Fifth conference of executives at La Salle Hotel, Chicago, Ill., will be held on Jan. 17 and 18, 1921. Secretary-Manager, Ellery B. Gordon, Philadelphia, Pa.

American Institute of Mining and Metallurgical Engineers' annual meeting will be held in New York, Feb. 14 to 17, 1921. Secretary, Bradley Stoughton, 29 West 39th St., New York City.

The Wholesale Coal Trade Association of New York, Inc., will hold its annual meeting in New York City, Jan. 18, 1921. Secretary, Charles S. Allen, 90 West Street, New York City.

American Society of Civil Engineers will hold its annual meeting Jan. 19 and 20, 1921, at its headquarters, 33 West 39th St., New York City. Acting secretary, Herbert S. Crocker, 33 West 39th St., New York City.

Northwest Mining Congress will hold its annual convention Feb. 28 to March 5, 1921.

Northern West Virginia Coal Operators' Association will hold its annual meeting Feb. 8, 1921. Secretry, H. S. Rogers, Fairmont, W. Va.

Pittsburgh Vein Operators' Association of Ohio will hold its annual meeting, Feb. 14, 1921, at Cleveland, Ohio. Secretary, D. F. Hurd, 415 Marion Building, Cleveland, Ohio.

American Institute of Electrical Engineers and American Institute of Mining Engineers will hold a combined meeting of the local sections on Jan. 21, 1921, at Pittsburgh, Pa.

Canadian Institute of Mining and Metallurgy will hold its annual meeting March 2, 3 and 4, 1921, at Ottawa, Ontario, Canada. Acting secretary, R. R. Rose, Montreal, Quebec, Canada.